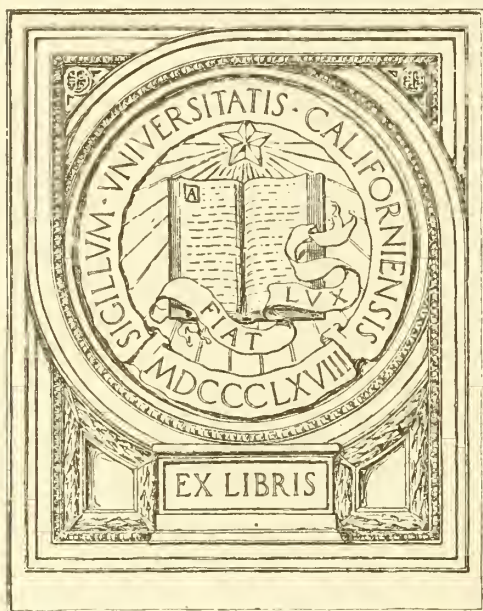




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# MINNESOTA MEDICINE

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# MINNESOTA MEDICINE

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## THE REMINISCENCES OF A NEUROLOGIST\*

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*Saint Paul*

IT was through the kindly interest of Dr. Alexander J. Stone, one of the most brilliant and distinguished of the pioneer physicians of this state, that I located in St. Paul in 1881. I had just finished a senior internship in the Woman's Hospital in Baltimore, and hoped ultimately to specialize in gynecology. The "Three Sisters," however, ordered otherwise—a most fortunate decision for me.

Forty-six years ago, the medical curriculum was sadly deficient along neuropsychiatric lines; like surgery, it awaited its Lister. The neurologists and psychiatrists of that period were Dr. William A. Hammond, Dr. Edward C. Seguin and Dr. Alexander Hamilton McLane, who says in his "Recollections of an Alienist"—"For a long time I was one of the very few neurologists in the United States." There were only four in New York; two in Boston; the same number in Philadelphia and one in Chicago. The fourth, in New York, was the psychiatrist, Dr. John P. Gray, Superintendent of the State Hospital at Utica. He and Dr. McLane were experts in the Guiteau trial in 1881. Dr. Seguin was Clinical Professor of Diseases of the Mind and Nervous System in the College of Physicians and Surgeons. He was a remarkable clinician; in therapeutics his was a master mind; in this particular respect there have been no successors able to wear the mantle of Elijah. I would advise the young men present to read his "Opera Minora." I am sure they will derive from it what their elders have in the past. Dr. James Jackson Putnam was the pioneer Boston neurologist. To his initiative was due the Neurological Clinic of the Massachusetts General Hospital. He was the

first Professor of Neurology of the Harvard Medical School. There were three noted psychiatrists practicing in Boston at that time—Dr. Thomas Waterman, Dr. Clement Adams Walter and Dr. George F. Jelly. The latter was the first to conceive and advocate the line of endeavor that has materialized in our present psychopathic hospital. In addition to Dr. Weir Mitchell in Philadelphia, there was Jeremiah Thomas Eskridge, who was a post-graduate instructor, in 1883, in Mental and Nervous Diseases in Jefferson Medical College. In 1871, Dr. James Stewart Jewel began the practice of mental and nervous diseases in Chicago. In 1874 he established the "Quarterly Journal of Nervous and Mental Diseases." It survived many vicissitudes and now appears monthly as "The Journal of Nervous and Mental Disease," ably edited by Dr. Smith Ely Jelliffe.

The three outstanding neurologists of this country were William A. Hammond, S. Weir Mitchell and Edward C. Seguin.

On arriving at St. Paul, I found actively functioning a Medical School—"The St. Paul Medical College." It was an expression of the pioneer spirit of the day, aflame with scientific ardor, untiring and unselfish. Its faculty comprised representative medical men of both cities. Humble in its beginning, situated over a saloon on West Third Street, yet after a period of evolutionary travail, it ultimately became the Medical School of the University of Minnesota, today the only medical school in Minnesota, a state with a population of 2,563,550. Of the twenty-seven charter members of the faculty, eight are still living—Drs. Beard, Fulton, Bracken, Greene, Bell, Jones, Dunsmoor and myself. As I found the Professor of Materia Medica

\*Read before the Central Neuropsychiatric Association, St. Paul, Minn., Oct. 7, 1927.

and Therapeutics, Dr. James Davenport, seriously ill, I was asked to complete his course, and as this opportunity appealed to me, I gladly accepted. I burned the midnight oil. Very distinctly I remember my first lecture. There were no S. O. S.'s in those days but one was sadly needed. My embarrassment was great, but the amusement of the students was far greater. In the following year, the faculty added Mental and Nervous Diseases to the curriculum. So little was known about nervous and mental diseases at this time that there were no applicants for the position, and it was given to me.

"So nigh is grandeur to our dust,  
When youth replies, 'I can.'"

Thus began for me life's great adventure. My qualifications were meagre; very little attention was given to neuropsychiatry at that time. Of the cytology of the nerve cell we knew nothing and of the architecture of the nervous system we knew less. Psychiatry was also in its swaddling clothes. It has been my rare good fortune to trace and observe the development of our specialty from these small beginnings to its present noon-day splendor.

"We build our future thought by thought,  
By word or deed and know it not."

I was received by my confrères, the pioneer medical men of this state, most graciously, but graciousness does not pay office rent, and to them nervous, and especially mental, diseases, like  $x$ , indicated an unknown quantity in which they had little or no interest. In 1888, the Board of Regents of the University of Minnesota established the Medical Department of the University of Minnesota. Nervous and Mental Diseases were given a Chair equal in rank and prerogatives with those of Medicine, Surgery and Obstetrics, with the exception that its vote in Faculty matters was properly proportioned to the Major Chairs. Medical Electricity was included in this department. At this time it was regarded as possessing a real importance. Electro-physics, as a basis of an intelligent electro-therapy, was conscientiously taught. For twenty-five years it was my great privilege to be the head of this Chair.

One of the greatest pleasures of life's Autumn is to meet my boys, as I love to call them, who are distributed all over the Northwest, and reminisce. Their kindness more than compensates for a quarter of a century of gratuitous service.

There were few medical schools at this time where psychiatry was made obligatory. Sir Thomas Clouston says in 1896, "The Study of mental diseases is now entering on a new era; it has for the first time become obligatory." The personnel of the student body thirty-nine years ago was very different from that of today. "The medics," says Dr. Beard, "were hard-working, ambitious, critical as ever—a rough lot. To pass up a student over the amphitheatre benches was a common pastime \* \* \* ; to conceal animals, large or small, dead or alive, in the reading desk or under the seats, to mix chemical solutions so the reactions would not work, to introduce a stiff into a faculty meeting were quite ordinary pranks." Richard Olding Beard was one of the men indispensable to the Medical Faculty. His life has been devoted to the Medical School. The University of Minnesota has never had a more faithful servitor. Dr. Beard has the rare gift of brilliant writing. He has written "each one of the memorials of the men of the Faculty who have died, from the beginning of the school to the present time," the last one being that of Dr. A. W. Abbott. President Northrop said to him while walking across the campus one day, "Beard, when I die, I hope you will write my memorial, if I may be considered to deserve one." When Dr. Northrop died, he was invited to do this as the representative of the entire faculty.

There was a feeling almost amounting to an aversion on the part of the students regarding neurology and psychiatry. In the light of today, the explanation of this feeling is perfectly clear, especially as far as neurology is concerned. It required the researches of Golgi, Cajal, Ferrier, Brevor, Fritsch and Hitzig, Edinger, Hughlings Jackson, Charcot, Horsley and a host of other brilliant workers to illumine and basically ground our specialty and make it the most alluring and attractive of all branches of Medicine. It was the boast of Augustus that he found Rome built of brick and that he left it built of marble. It was the staining methods introduced by Gerlach, Weigert, Marchi and many others, supplemented by the remarkable work of Golgi and Cajal, that made possible a more detailed study of the minute architecture of the nerve cells and their processes. These distinguished investigators and their predecessors found only brick, but left a stately edifice of marble.



**The first faculty of the University of Minnesota Medical School.**

First row: James H. Dunn, Perry H. Millard, Cyrus Northrop, C. Eugene Riggs, E. J. Abbott.  
 Second row: Archibald MacLaren, John F. Fulton, George A. Hendricks, Charles Bell, James E. Moore.  
 Third row: H. M. Bracken, Charles Lyman Greene, Max P. Vanderhorck, Parks Ritchie, F. A. Dunsmoor, A. W. Abbott, J. Clark Stewart.  
 Fourth row: R. O. Beard, C. H. Hunter, W. A. Jones, J. W. Bell, A. B. Cates.  
 Fifth row: Alexander J. Stone, Frank Allport, Charles Wells.  
 Sixth row: Charles A. Wheaton, W. L. Laton.

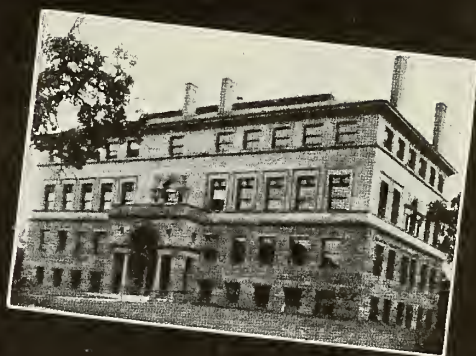
During a post-graduate course in the laboratory of the late Alexander Bruce (Edinburgh), I acquainted myself with the technic of the various methods. I especially familiarized myself with the remarkable work of Golgi and Cajal. I obtained exquisite lantern slides which illustrated the various modes of procedure. On my return home, I gave the Senior Medical class a course of lectures, with the stereopticon, acquainting them with the minute anatomy of the nervous system. Golgi died in 1926, in his eighty-third year. His great contribution to which the world is indebted is "a method which gave a deeper insight into the architecture of the central nervous system." Cajal bears his seventy-odd years lightly; his scientific ardor is undiminished, although his capacity for sustained effort has materially lessened. I brought home with me a microtome, an invention of Dr. Bruce, and established a neuropathological laboratory in the St. Paul Medical College—then used for clinical lectures and a free dispensary. This was the first laboratory of neuropathology in Minnesota. For a time I was fortunate in having Dr. Louis B. Wilson in charge. He made a study of the spinal cord of a patient of mine that died of pernicious anemia. I reported this case and the neuropathological findings before the American Neurological Association at Philadelphia in 1896. Putnam made the first contribution in this country to this subject in 1891. Three months later, Dana reported a case. In 1899 he reported still another. My case is the third in American literature.

It was with great trepidation of soul that I gave my first course of lectures on neuropsychiatry in 1882. Dr. William A. Hammond's *Diseases of the Nervous System* was the outstanding textbook at the time. It passed through eight editions. Hammond was a keen clinical observer, a fascinating lecturer and possessed a brilliant mind. That he did not suffer from an inferiority complex, the following quotation from the preface shows: "Fifteen years the *Treatise* has been before the Profession; it has continued to receive approval at home and abroad to an extent beyond that ever given to any work of like scope and objects, published in any part of the world." His most noted confrère was S. Weir Mitchell. The rest cure gave Dr. Mitchell a world-wide fame. I regard it as the least of the distinguished service he rendered neurol-

ogy. Frankly, I believe it has done more harm than good. This form of therapy is indicated in only a minority of cases. It must be given by one who knows his psychology, for if he fails to perceive the motive or drive lying subconsciously or consciously in the mind of the patient, which is the crux of the trouble, disintegration, not integration, occurs in the personality. As commonly given, the rest cure furnishes a fertile soil for the development of latent schizophrenic tendencies. Both Dr. Hammond and Dr. Mitchell, changing slightly the title of one of Joseph Collins' books, looked at literature, and to Dr. Mitchell there came enduring fame. I heard him in his early eighties read a paper before the American Neurological Association. He never made a finer contribution—clear, terse and illuminating.

When we compare the viewpoint of nervous and mental diseases forty-six years ago with that which obtains today, our credulity is taxed to the utmost. Perversion of function in nervous troubles—the so-called neuroses—were accepted by all. Chorea, we now know, is an encephalitis due probably to the diplococcus rheumaticus, which has been found in the pia mater of fatal cases. We no longer speak of epilepsy but of the epilepsies. We do not now regard essential epilepsy as a "disruptive cortical discharge" but we believe that this, together with the symptomatic forms, constitutes purely a syndrome, arising from a great variety of causes. Is epilepsy declining? A census taken by the National Committee for Mental Hygiene, January 1, 1920, exclusive of the epileptics among the insane, showed that there were 14,937 epileptics under institutional care in the United States. A census of the Federal Bureau, January 1, 1923, disclosed 12,936, a reduction in number of 2,001, as compared with the previous census. A census of the epileptics in the state hospitals in 1904, as compared with the census of 1923, showed a decrease of 1,636. "It seems," says Horatio M. Pollock and Edith M. Furbush, "that a decline in the number of epileptics in the community has also taken place." The reason for this decrease is as yet a matter of pure conjecture.

Thirty years ago, Byrom Bramwell stated that poliomyelitis anterior acuta was probably due to some toxic irritant in the blood and that future observations would most likely demonstrate the



Laboratory of Medical Sciences,

Medical Hall.

University of Minnesota Medical Department, about 1900.

presence of a micro-organism or the products of a micro-organism as the infective agent, and that poliomyelitis was neither infectious nor contagious. The micro-organism has not been isolated; it is believed to be a filter-passer. Not until after the Vermont epidemic in 1894 did it occur to me that it ever manifested itself in any other than the sporadic form.

It is estimated that one-fourth of the survivors of an epidemic recover. The remainder, to a greater or lesser degree, are the victims of a life-long disability. For about 100 years we have known of infantile paralysis. The contribution of this generation to the knowledge of this disease has been:

(a) That it is infectious, with a special affinity for the central nervous system, particularly for the anterior horns of the spinal cord.

(b) That while there are no definite aids to assist in diagnosis, yet the examination of the spinal fluid possesses a diagnostic importance.

(c) In the acute phase, the treatment is purely empirical, as it has been for the past forty years. Therapy can be summed up in one word

—rest. Weak muscles must be protected, affected limbs immobilized; especially is this true of the head and the spine. Rest, general and special, must be individual and necessarily indefinite. Years ago, therapy began six weeks after the beginning of the acute attack; in the light of today, this was cruel, brutal and harmful.

I recall "a symposium on spinal concussion" that was read before the Minnesota State Medical Association, thirty-five years ago, which was the outstanding feature of that session. Drs. W. A. Jones, Arthur Sweeney, the late H. A. Tomlinson, Leo Crafts, R. O. Beard and myself, the Chairman, discussed different phases of this subject. It is an interesting fact that hysterical stigmata, notably anesthetics, hyperesthesias, amaurosis, usually unilateral, etc., have of late years, like the types peculiar to the Salpêtrière of Charcot's day, been exceedingly rare. Could the feminism of today, with the larger opportunities, both physical and mental, explain their disappearance, as well as the apparent increase in so many other morbid nervous and psychical conditions? (Flemming.)

For the medical expert these were the days of the cave man. The lawyer knew his nervous anatomy better, as a rule, than the expert. It was the duty of his associated experts to see that he did. I remember a distinguished St. Paul surgeon, as he was leaving the witness stand in a celebrated case in which Dr. Sweeney and I were interested, remarking, "That is hell." Dr. Perry Milliard, to whom Minnesota Medicine owes a debt of eternal gratitude, during the discussion following, quoted Judge Story as saying, "There were three kinds of medical experts, who should be classified respectively as liars, blanked liars and medical experts." Dr. Jones, speaking of Erichsen in his paper, suggested that the advice of Gapin of Omaha be followed—that the so-called disease be dedicated to him so that he might bear the obloquy of it. Erichsen, Page and Clevinger regnant for a day—then kind oblivion. The individual papers composing this symposium, as I read them after the lapse of thirty-five years, I found to possess real merit. They reminded me, however, of a saying of Josh Billings, that "It is better to be ignorant than to know so many things that are not so." We look back, laugh and sigh, our eyes grow misty—the good old days!

During the last days of May and the first of June, there was celebrated at the Salpêtrière, the centenary of the death of Pinel, who immortalized his name by breaking the shackles of the insane and delivering them from close confinement in prisons and opening to them special hospitals. Several Swiss physicians, inspired by his humanitarian ideas, introduced similar reforms in Swiss asylums. Köggsfelden inaugurated treatment by labor in 1810. Twenty-five years elapsed after this dramatic gesture by Pinel before his good example began to bear fruit.

For many years it has been my privilege to know the representative asylum superintendents of this country. They are a splendid set of men—possessing the rare qualities of insight and foresight. Prior to the State Board of Control, I was Chairman for ten years of the Minnesota State Lunacy Commission. Governor Merriam authorized me to visit the asylums of Europe and I visited those of England, Scotland, Ireland and France. I asked a superintendent in Ireland to give me a bird's-eye view of his hospital; he asked me to come with him; he took me to the

top of a high hill overlooking his institution. "This," he said, "is a bird's-eye view." At any rate, it was all I saw of his asylum. The two outstanding psychiatrists that I met during my investigations were Sir George Savage and Sir Thomas Clouston—two men who have more profoundly influenced my psychiatric studies than any other alienists that I have ever met. As chairman of the committee on the history of the treatment of the insane, of the twentieth annual meeting of the National Conference of Charities and Correction, which met in Chicago in 1893, I gave a report on "The care and handling of the insane in the last twenty years." In this report I stated that "the State Boards of Lunacy Commissions, Associations of Superintendents—all—while at times accused of over-conservatism and at others of over-daring, have worked toward the light as seen by them." The Krapælinian classification was a great boon to psychiatry, but it has served its day, and newer and truer conceptions of insanity now prevail. In May, 1893, I made a plea, before the North Dakota Medical Society, for the voluntary commitment of the insane. Later, I presented papers calling attention to the necessity for an asylum for the criminal insane and detention hospitals for the acutely insane. If an attack developed suddenly, without money or friends, these were placed in the common jail until commitment could be made—an act of barbarism. After years of propaganda, by my confrères and myself, I had the satisfaction of seeing these reforms, first proposed by me, enacted in law. The voluntary commitment law was passed in 1909. Detention hospitals were also established in Duluth, Minneapolis and St. Paul, in 1909, where patients could be kept under observation until a diagnosis could be made. A department for the criminal insane was created at the State Hospital at St. Peter in 1907.

While Chairman of the State Lunacy Commission, I found I could obtain the services of Dr. Ford Robertson, a brilliant neuropathologist, who later had under his charge all the neuropathology of the Scottish asylums. He also gave courses on the subject to the staffs of the different asylums of Scotland, for an insignificant salary. The Commission recommended that he be invited to take in charge the neuropathological work for the Minnesota asylums, instructing their various medical staffs and correlating their

work, his laboratory being located at the University—a wonderful opportunity—but vision was lacking to see its great potentialities. Later he wrote a textbook on insanity and became a recognized authority.

For twenty-one years I practiced neurology, believing that tabes dorsalis was “a sclerosis of the posterior root zones of the spinal cord, which Dr. W. A. Hammond described as one of the most thoroughly understood diseases in the whole range of medical science.” Paresis was attributed to excessive venery and alcoholic excess. In 1903, Metchnikoff injected apes with syphilis and demonstrated that it was an infectious disease. This was the first of a series of notable discoveries. Schaudin, in 1905, discovered the *spirocheta pallida*, and in 1906 Ehrlich gave arsphenamin, a priceless gift, to the world. As a sequel to this remarkable epoch, Noguchi, in 1912, observed spirochetes in the brains of forty-eight paretics and in the spinal cord of one tabetic. From this time, neurosyphilis had a definite pathology and a scientific therapy.

It was my privilege to introduce and use the Swift-Ellis method in Minnesota. The patient was a paretic in whom there occurred a temporary remission. Unfortunately, shortly after this, their occurred the Los Angeles tragedy, which caused a merciless criticism of this procedure. In the thousands of cases in which I have used the Swift-Ellis treatment, there have occurred no untoward results. Arsphenamin, bismuth, mercury and iodide, experience shows, are the most useful agents in meningeal and vascular syphilis. In parenchymatous lues, tryparsamide and malaria are conceded to be the most beneficial treatment. Arsenic\* as a therapeutic agent has undergone many vicissitudes since the days of Hippocrates; La Spina sold it to the young matrons of Rome as a cure for their matrimonial difficulties. Naturally it fell into disgrace when its use as a secret poison became widespread. However, it survived these abuses. In my neurological work I have found it a drug of surpassing worth. Its value in chorea was impressed upon me by Dr. W. A. Hammond and Dr. Edwin C. Seguin. In very severe cases, Hammond used it in glycerine, hypodermically. I always pressed it to the physiological limit; in only one instance did there occur an arsenical neuritis.

In pernicious anemia, in which I have used it for years, Gulland recently stated: “In this disease, arsenic is still our standby.” In the therapy of syphilis, it is our most valuable drug. Its intravenous use in disseminated sclerosis is frequently followed by a remission. As a nervous tonic it has no equal.

In my early professional life, paresis was regarded as an insanity, usually manifesting itself in three types, *i.e.*, the grandiose, the melancholic and the demented, the grandiose form occurring most frequently. Noguchi demonstrated that it was not a psychosis but a spirochetosis of the brain, whose symptoms may run the whole gamut of mental disease. As I recall the bitter struggle that has raged regarding the therapy of neurosyphilis, there occur to me the lines:

“How few think justly, of the thinking few  
How many never think, who think they do.”

Molière described the medical world of his day as an emulsion of charlatanry and science, and when we recall some of the manifestations of its credulity during my lifetime, we can appreciate his satiric epigram.

In the early eighties, long before our modern concepts of the internal secretions, a wave of oöphorectomy swept over this country. Removal of the ovaries was believed to be a panacea for neurasthenia, epilepsy, hysteria and nervousness generally. It was a “slaughter of the innocents” leaving incredible suffering in its wake. The lacerated cervix, the movable kidney and the displaced uterus in the days that are bygone were believed to be a veritable Pandora box, out of which sprang all forms of nervous disorders. Are these less frequent or is it no longer fashionable to talk about them? Will not this be the case with blood pressure in the years that are to come?

One of the most inexcusable fads forty years ago was the suspension treatment for nervous disease. It was suggested by Motchoutkowski and popularized by Charcot. While I treated many cases by suspension, it always seemed to me to be irrational and unscientific. The following incident of the pioneer days, with no neurological bearing, is worthy of record. Dr. Alex. J. Stone was the first in St. Paul, and I believe in the State, to introduce the use of chloroform in obstetrics. This innovation was bitterly opposed, because, said his critics, “It was contrary to Holy Writ—did not God say to the woman

\*Editorial British Medical Journal, Oct. 15, 1927.

'I will greatly multiply thy sorrow and thy conception—in sorrow thou shalt bring forth children.' " Unfortunately, in the administration of this priceless boon to one of his puerperal clientele, in whom there had developed grave complications, the patient died. The chloroform, Dr. Stone thought, had nothing to do with her death. The storm of abuse and merciless criticism that swept over him was truly cyclonic, but Dr. Stone was no weakling; he was one of the great men of his day. This untoward experience seemed to increase rather than diminish his popularity. "He who would write an heroic poem," says Milton, "must make his whole life an heroic poem." Medically speaking, his life was an heroic poem. His sun reached its zenith undimmed—it set in a cloudless splendor.

The passing of the good old days none can deplore, because with the increase of knowledge not only have certain diseases disappeared but a majority of the others have been modified almost to the point of being benign. "Senility" says Flemming, "while not a disease, may be added to the list of disappearing diseases. There is much evidence that its onset is postponed by several years." However, "the only thing," says Sir Arthur Keith, "that scientists will probably never conquer is old age."

Eighteen years ago last January, I invited the neurologists of the Twin Cities to be my guests at the Minnesota Club. That evening there was organized the Minnesota Neurological Society. There were present Drs. W. A. Jones, R. O. Beard, Leo Crafts, A. W. Dunning, J. B. Johnstone, Charles R. Ball, H. W. Jones, A. S. Hamilton and myself. It was voted that those present, with the addition of Drs. Arthur Sweeney and Haldor Sneve, who were unable to attend, be made the charter members of the Society. I was elected president; Dr. Leo Crafts, vice-president; Dr. W. A. Jones and Charles R. Ball were made members of the Council. During the second term of my presidency, Dr. Archibald Church gave the Society a notable address. The Minnesota Neurological Society has been a growing concern; it has greatly stimulated things neurological and has developed a delightful camaraderie among its membership. Among our most valuable members and enthusiastic workers are the neurologists of the Mayo Clinic. These gentlemen and their neurological surgeon, Dr. Adson, give the Society a clinic every spring—a

clinic unsurpassed; then entertain us royally—Shade of Epicurus—they are "jolly good fellows."

House tells us there are 3,211 neuropsychiatrists in this country. Nine hundred and twenty-five devote their full time to the specialty; 315 are in private or semi-private institutions and 665 give only part time—a total of 1,905 in private practice. The remainder are in public service. No specialty in medicine offers a greater opportunity. Like a poet, a neurologist is born, not made. A neurologist must make good; it will not do to say, as can be said of hundreds of thousands of men, "He meant well, tried little and failed much."

Of our charter members, two have died—Dr. Arthur Dunning and Dr. Haldor Sneve. To know Dunning was to love him. He was gentle, yet strong; sympathetic, yet virile; in his heart there was the milk of human kindness—a gift indispensable if one is to reconstruct and reintegrate a crushed and hopeless personality. He was a hard worker and achieved greatly. The Children's playgrounds in St. Paul are largely due to his untiring efforts. Dunning Field is an abiding memorial to his civic interest and personal worth. The last year of his life he suffered greatly, being subject to anginal attacks. He made no complaint but continued his work with as much zest and interest as if in usual health. A struggle with an insane patient was followed within a few hours by an anginal attack which caused his death.

More than a quarter of a century ago, I recall Dr. Sneve being present at a meeting of the Ramsey County Medical Society, when I made my presidential address. He had recently located in St. Paul as a neurologist. Although he was made Chief Surgeon of the Great Western Railway Company, he never for a moment lost his ardor for neuropsychiatry. Later he became Associate Professor of Nervous and Mental Disease in the University of Minnesota. Of all our members, he was perhaps our most ardent Freudian. Dr. Sneve was a most genial gentleman; he seldom missed a meeting of our Society. His discussions were thoughtful, interesting and entertaining. Although ill for several years, none would have suspected it. His quiet courage would lead one to think that, like Beethoven when he found deafness coming fast upon him, as a disastrous addition to the other woes of

life, he said, "I will grapple with fate; it shall never pull me down."

Some fifty years ago, certain philosophers conceived the idea of the subconscious; it was purely an academic concept. It was not thought in any way to influence the activities, the ideals or the life of the individual. Psychology has ever delved into the inner recesses of the mind to find an explanation for all our motives and conduct. Freud would seem to have seized this concept and to have evolved from it his contribution to psychology in the making. According to Berman, his teachings have opened up for us the geology of the soul—quite melodramatic and quite meaningless. Freud, now a septuagenarian, is a notable personality; he still enjoys his work, and his seventy years, he states, "have taught him to accept life with cheerful humility." "Perhaps the gods are kind to us," he said to Vierick, "by making life more disagreeable to us as we grow older; in the end death seems less intolerable than the manifold burdens we bear." America was the first to recognize his work, yet his opinion of Americans is far from complimentary. He regards them as generalizers, rarely showing a creative mind; they have made, he says, but few original contributions to Freudian psychology (Vierick). Our literature of the last decade has been saturated with his teachings. A writer of distinction said to me that of two hundred books reviewed by her, one only was suitable for the home. *Pari passu* with the dissemination of this psychology, a startling change has taken place in the home life of this country. Moral progress has declined; ethical values and spiritual realities have markedly lost their former appeal; lawlessness and crime have increased. Obedience, self-restraint and self-sacrifice are more of a memory than a fact. This mechanistic conception of life has made people think of themselves as highly organized machines; the animal instincts are more dominant. Even Mental Hygiene is too frequently a masquerade for the exploitation of the Freudian idea. "The voice is Jacob's voice but the hands are the hands of Esau." Already the social order shows satiety and weariness with this Freudian invasion. With Dr. S. Parkes Cadman, I believe "in the irrepressible resilience of the spiritual instinct." A highly cultured French Baron said to me last winter that the French did not accept Freud's teachings but they did believe that his

philosophy was a great stimulus to the evolution of the New Psychology, which is a distinctly different thing from the Freudian concept.

One can understand this sensualization of the social order, if Vierick, in his interview with Freud, reports correctly his reply to the question "Would we not be happier if we knew less of the processes that shape our thoughts and emotions? We are not made more joyous by discovering that we all harbor in our hearts the savage and the beast." "I prefer," replied Freud, "the society of animals to human society. The savage, like the beast, is cruel, but he lacks the meanness of the civilized man." This lack of appreciation, by Freud, in his psychology, of man's moral worth, of the sanctities of human nature, of the divine impulsions that have entered into the life of man ever since man was man, will largely account for this deterioration of the social order.

I have barely touched upon the great changes that have taken place in neurology during the past forty years. Changes equally great have occurred in its relation to medicine and the specialties in particular. In medicine it has found itself and its great importance is now generally recognized. The medical student no longer regards it with aversion but gladly avails himself of every opportunity that medical schools now offer to acquire all possible knowledge of this specialty. The protean manifestations of nervous symptoms are no longer looked upon as being imaginary or hysterical; these manifold disorders of personality have a cause; only crass ignorance regards them lightly and as a joke. Throwing a pitcher of cold water into the face of an hysteric is as rare now as a phlebotomy. The medical man of today who does not possess a working knowledge of neuropsychiatry is an anachronism for which the medical profession has no place.

Bronson Crothers read a paper before the American Neurological Association at its last meeting, in which he stated that he was tired of mixing formulæ. He discussed the feasibility of pediatricians treating all forms of children's diseases including those formerly classed under neurology. The discussion was side-tracked to mental hygiene and the reaction of the Association to his thesis was not learned. As a matter of fact, for years, the internist, the pediatrician, the orthopedist and the urologist have treated

nervous affections that formerly were cared for by the neurologist—to the psychoses they lay no claim. This invasion of neurology reminds me of a remark made by Bishop Fowler, in his great lecture on Abraham Lincoln, many years ago. "England," said this distinguished divine, "is the greatest robber the world has ever known—yet she has always left more than she has taken"—the specialties have left more than they have taken. The child presents many difficult problems with which the pediatricist is not prepared to deal. There is the evolutionary urge from childhood until personality is achieved, during which the dendrites and axis cylinders grope their way along their predestined paths until the marvelous artistry of the nervous mechanism is complete. In this complex civilization, the adjustment to the home, the church, the school, and the environment is in many cases a matter of great delicacy and requires the skill of a trained and skillful neuropsychiatrist. The distinguished orthopedic surgeon, the late Dr. Gillette, many years ago said to me that one's clientele should come from his own patients; that dependence on his confrères was not to be relied upon for referred work; that the character of work that a doctor does should be a perpetual testimonial to his ability and competency. This was not only good advice but good psychology. Since the development of group medicine, many groups care for and treat their neurological patients. The falling off of this usually referred work has been a noticeable loss to the exchequer of the neurologist.

Greater changes will occur in neurology in the forty years that are to come than in those that have passed. The acute infectious nervous diseases will, I believe, be eliminated. For the chronic nervous affections—progressive muscular atrophy and disseminated sclerosis, which are not abiotrophic but probably arise from a micro-organism, a vaccine or a serum will be found. In the disorders of personality, psychology will strike the dominant therapeutic note. General Wood, who did so much for leprosy, predicted shortly before his death that within a decade it would cease to exist in the Philippines. Sir Arthur Keith says, "Whether it be this year or next, or the year after, I am certain that we shall find a cure for cancer . . . ; increased knowledge of the atom bears directly on medicine and the ultimate knowledge of life may well

be found in physics." The late Sir Frederick Mott has said that in three generations insanity will die out or revert to the normal. Perhaps all this is an illusion of hope. Bacteriology and biochemistry possess dynamic potentialities. You younger men will follow the gleam—you will strive worthily and achieve much. Upon your efforts will depend the accomplishment of this great consummation—your eyes will behold the vision splendid. I have known many distinguished neurologists during the years—master workmen were they—great minds, but withal unpretentious and genial—apparently unaware of their great genius. One name, the late Prof. J. M. Charcot, in my opinion, dominates them all. His great renown was supposed to arise from his studies of functional nervous disease and hypnotism. Nothing could be farther from the fact. Charcot was primarily a pathologist; his most important work dealt with organic nervous diseases; it was his studies of the spinal cord and brain that gave him lasting fame (Starr)\*. First an internist and pathologist; then a neurologist. Like Fritsch and Hitzig and Ferrier, he made important contributions to the localization of the functions of the brain. Starr states that in 1882 he saw only one case of hysteria demonstrated in the whole semester. "Above all," says Sachs, "he was a diagnostician." In his famous Tuesday morning lectures, a calcium light was flashed on the patient—he being the center of the only light in the room. Charcot read the history and then discussed the case. If it were a case of tremor, other cases of tremor were ushered in so that the different kinds of tremor could be contrasted. The patient was sent out and lantern slides were thrown on the screen. The nature of the lesion, symptoms and diagnosis were all before the students—most dramatic, most impressive (Starr). It was medical gossip at that day that the remarkable cases of hysteria seen in the wards of the Salpêtrière were manufactured in the hospital for Charcot's use. It is true that cases of this neurosis were seen there that could not be found in any other hospital. Such was his probity of character that this criticism passed him harmlessly by. So remarkable was his personality, so dearly was he loved and trusted by his patients that his simple

\*The New York Neurological Society and the Section of Neurology and Psychiatry of the Academy of Medicine. Centennial Celebration of the birth of Charcot. Joint meeting Dec. 8, 1925. Archives of Neurology and Psychiatry.

appearance was a most potent suggestion. Sachs gives an excellent illustration of this. "After one of his lectures on hysteria, the entire class was taken up into one of the small wards, in which there were twelve or fifteen women patients. Some of the students were on one side and the assistants on the other and a passage was made for Charcot to pass through the middle. The moment he was seen by the patients, the entire ward fell into an hypnotic state, every patient presenting some form of hypnotic trance." The year following Charcot's death, I reached the Salpêtrière, which, then as now, is a marvelous reservoir of clinical neurology—justly famous and beyond compare. I studied with Jean Charcot, who, to his father's great disappointment, gave up the practice of medicine. As an explorer of the Arctic and Antarctic regions, he has gained a world-wide fame, being the first to approach the South Pole before Shackleton reached it. Commander Charcot had an attractive personality and possessed to a degree, at least, the gift of imparting knowledge that characterized his distinguished father. I saw French neurology at the close of its golden age. There is nothing more remarkable in medical history than the devotion and reverence of Charcot's pupils. "For a period of a little more than ten years (1880-1893) there was not a book published on a neurologic subject in France," says Sachs, "that was not either dedicated to Charcot or written at his inspiration." Charcot, to us younger men, was a beacon light—a dynamic urge. His last years were shadowed by jealousy and acrimonious criticism of distinguished confrères. He suffered from valvular heart disease, age crept apace, yet his dignity and serenity were unruffled. His alertness, mental vision and scientific ardor were undimmed. Thus died Prof. J. M. Charcot, in his sixty-eighth year—a fitting close to a great life.

Forty-five years ago, I began my great neurological adventure. These forty-five years have been characterized by an unprecedented world flux—medical, scientific, social and religious—"with the marvel of today becoming the commonplace of tomorrow." As age advances, this specialty to which I have devoted my life "is my own familiar friend and has helped me over troublous times in so far as that was possible" (Nauyn). It is a long trail from the neurologist of 1882 to the splendidly equipped neurologists of today—from the St. Paul Medical College to the Medical Department of the University of Minnesota—from the apathy and indifference of the pioneer medical men of that day to the keen interest and growing knowledge of things neurological, which is characteristic of the general practitioner of 1927—a long trail, crowded with colorful incidents—years of strenuous struggle, anxiety and joyous endeavor, years of abiding friendships and of great happiness hallowed by blest association with my "comrade incomparable."

James Russell Lowell tells us that the past is a good nurse; memories are life's great dynamic. These lives, during the years that have come within my ken, with their joys, sorrows, hopes, aspirations and dark despair, remind me of what Alcibiades said about Socrates—that he resembled a Silenus mask which the Statuaries used to keep in their shops, hideously ugly on the outside but when opened found to contain within images of the gods. What patience, what splendid heroism, what courage unsurpassed, have these patients of mine shown when looked at from within.

"Built of tears and sacred flames,  
And by virtue reaching to its aims;  
Built of furtherance and pursuing,  
Not of spent deeds but of doing."

## PRESIDENTIAL ADDRESS\*

WILLIAM F. BRAASCH, M.D.  
*Rochester, Minnesota*

THE Minnesota State Medical Association is today in the most prosperous and most vigorous condition that it has ever been. We might well point with pride to the progress that has been made during the present year and sense the pleasure of actual accomplishment. The progress made was due to the hard work of the various committees and the splendid coöperation of the members of our association, and I would like to express my personal pleasure and gratitude for what they have accomplished.

In reviewing the various activities, probably the most important, as well as the most spectacular, achievement was the passage of the Basic Science Bill. If this association never does anything else, it will have justified its existence in bringing this about. It is not so much any direct benefit, either economical or professional, which we may derive from this measure that appeals to us, as it is the fact that the public has recognized that certain fundamental qualifications are necessary to the practice of healing. This principle has never received public recognition and it will go a long way toward the establishment of universal confidence in the ideals of the medical profession. The recognition of the merits of this measure since its passage, by editors, legislators, and numerous intelligent laymen, has been most gratifying. It is realized that in this measure organized medicine endeavored to safeguard the welfare of the public rather than further its own interests.

It is almost unnecessary to repeat what we all feel, namely, that the *greatest* praise should be given to the members of the Committee on Public Policy and Legislation, headed by the redoubtable Doctor Herman Johnson. We are proud of every one of them. Only those who worked with them realize how they labored day and night for months to put this measure across. I question whether we can ever get another legislative committee equal to them. I wish it were possible to keep them intact to fight our future legislative battles.

Do not think for a minute, however, that our

legislative troubles are over. Far from it. We will have to keep eternal vigilance that our labors are not nullified by some amendment or similar means. Although the passage of the major measure was most impressive, let us not lose sight of the other work this committee accomplished. In the passage of the Medical Registration Act we now have a model act of its kind and one which will be of much help to us in cleaning our own house. In addition, this committee succeeded in killing such measures as the Naturopath Bill, the Antivivisection Bill and numerous other propositions of a similar nature. Our Association will never be able to show them our gratitude adequately. I would like to express again our appreciation of the aid given us by those legislators who were friendly to this measure and also to the friendly attitude of our worthy Governor, Theodore Christianson.

It has been said that too much money has been used to put the legislative program over; that money was spent extravagantly and needlessly. It has even been whispered that it was used illegally to influence members of the legislature. In answer to such malicious and unwarranted statements, it should be said that in view of what has been accomplished, the amount of money spent in this campaign is insignificant. Those of us who are familiar with the items of expense know that there was no needless extravagance. We know, furthermore, that not one cent was given as a bribe. Those who criticize some of the methods employed to win legislative favor, none of which were vicious, should rather devote their energies to altering the status of modern society, which necessitates strenuous measures in order to accomplish even legitimate ends. Most of the money spent in this campaign was used to establish a more efficient organization of our State Medical Association, and it could not have been used for a better purpose. The entire profession to a man got back of the legislative campaign and a spirit of coöperation has been developed such as never existed before, and which can be similarly employed in the future, if necessary.

The work of the Committee on Public Health

\*Presented before the annual meeting of the Minnesota State Medical Association, Duluth, July 1, 1927.

Instruction, with Dr. George Earl as chairman, has also been of great importance. We are all only too well aware of the fact that the public is not well informed as to the true aims and ideals of our profession; that many people are not in sympathy with us and that some are in loud sympathy with cultists and quacks. This was very evident during the first legislative campaign for the Basic Science Bill. In fact, it was so painfully apparent that Doctor Frank Savage asked that a committee be appointed, whose chief purpose was to remedy this situation. The work of this committee has been carried on this year in a most satisfactory way. With the very active coöperation of Doctor Meyerding and Doctor O'Brien, this committee has conducted a series of highly successful Public Health meetings and plans to conduct many more. The scope of the committee has been expanded so that it now includes a wide field of activity and is a most important part of the work of this Association. The program that Doctor Earl has drawn up in a business-like way is so ambitious and all-embracing that if it is consummated it will have a tremendous influence on the future of our profession. I would have you all read it carefully when it is published in MINNESOTA MEDICINE in the near future.

The Committee on Medical Education and Hospitals, under the guidance of Doctor Pearce, has also accomplished much. This year a large number of available courses have been listed in a systematic manner so that the opportunities for graduate instruction are not excelled by any state. If the various county societies do not take advantage of their opportunities, their officers are not functioning properly. For want of time, I will only mention the splendid work done by the various other committees, but I would urge you to read their reports, which will be published in MINNESOTA MEDICINE. However, I cannot refrain from mentioning the painstaking efforts made by Doctor Kennedy, Secretary of the Medical School Committee, who has embodied the results of his investigation in a most complete and instructive report. I must also refer to the excellent work of the Program Committee, which has resulted in arranging the very interesting program you have been enjoying. Among the many developments during the year must be mentioned the initial conference of County Secretaries, which took place in St. Paul last Jan-

uary. Recognition of the great value of the County Secretary in our organization was tardy but well merited. The results of this conference will be far-reaching and should give a stimulus to every county society. It cannot be made too emphatic that the success of our State organization depends largely upon the activity of our county societies.

Incidentally, I would like to call attention to the fact that this is the first year that our Association will be guided by the Articles and By-Laws of our new Constitution. Although much of the old Constitution remains, many changes have been made to conform with the progress of recent years. It now stands as a modern and complete document. While conforming to the standard constitution set by the American Medical Association, it meets our own views and special problems. Much credit should be given to Doctor Frank Savage, and the members of his committee, who devoted a great deal of time and energy to this work.

There is one factor, possibly the most important in our progress, which I have failed to mention, and that is the tireless energy and the resourcefulness of our Secretary, Doctor Meyerding. He was in constant touch with every activity, took an active part wherever he was needed and used all the facilities at his command to further our interests. The Bulletins which he issued in terse, crisp messages, kept us all informed and continually stirred with enthusiasm. He has been a powerful factor in correlating the various health activities of the state. I trust that this latter movement may develop still further in the future so that the State Medical Association will be linked more closely with every agency which furthers health in any form.

It is very evident that all of these activities would have been impossible without working capital. Without the increase in dues, the legislative campaign and the work of the other committees would never have been possible. In view of what has been accomplished, I am sure that there is no one here tonight who begrudges the annual dues. So much remains to be done that unless the dues remain at this rate much of the good that has been accomplished will be lost.

One of the most promising features of our State Association is the increased activity and the spirit of good will existing in many of our county societies during the last few years. The

lethargy, the lack of purpose, the petty jealousies and discord that existed in many county societies several years ago have given way to a new spirit. Thank heaven, we have learned that belittling of ability, slurring and stabbing our fellow practitioners in the back is productive of no good; that it never wins a patient, but, instead, drives him elsewhere and makes him distrustful of all medical aid. There now exists in our ranks a greater spirit of harmony, a desire for coöperation, a sense of satisfaction that the State Association has accomplished much for its members. There is a general feeling of confidence in the future and a belief that more good will come from the organized efforts of our Association. Let us keep this spirit intact and let us make its influence felt in every county of our state.

Much of this good will has been brought about by regular dinner meetings where, gathered around the table, members had an opportunity to really get acquainted with one another, and iron out their difficulties. As we learn to know our colleague, we will usually overlook any shortcomings that he may have, realizing that we probably have as many. Many county societies have programs of real merit, including not only scientific papers, clinics and discussions, but consideration of economic subjects as well. Not long ago I had the pleasure of attending a meeting of a rural county society, where a program was given which would have done credit to this meeting. It is my hope that every county society will have an active organization, with a live secretary, a wide-awake delegate, and functioning public health and medical education committees. If it has not, get busy and get them. Incidentally, I would like to say that it would give me much pleasure to get in personal touch with as many of the county and district organizations as possible during the remainder of this year.

A most important accomplishment of the present year is the selection of Minneapolis for the next convention of the American Medical Association. Although it is true that most of the credit for this belongs to our brethren from Hennepin County, nevertheless, the State Association is proud to have taken part in the campaign. In asking the convention to come to Minneapolis it was emphasized that the invitation came from the physicians of the entire state, that the Minnesota State Medical Association

would act as hosts in coöperation with the Hennepin County Medical Society. That means, ladies and gentlemen, that we will have to play our part in this agreement and help make it the greatest meeting ever held. While the details will be left to the various local committees, and to the incoming officers of the State Association, we can now make a pledge that at least 90 per cent of the members of the State Association will be present at the meeting. That in itself will be evidence of our good will and active backing. But we must do more than that—we must open wide the doors to the beauties of our state. Visitors must be urged to visit, under personal supervision if necessary, our beautiful lakes and streams—to see our great natural resources, to come and tarry in this wonderful region of Northern Minnesota extending up to the Canadian border.

We are looking forward with great expectations to this meeting. We realize that its influence will be far-reaching and that it will be of great benefit, not alone to our own state, but to the entire northwest. It is difficult for those of us who do not have the opportunity to attend the annual meetings of the American Medical Association to realize what a powerful organization it has now become. This meeting, with its multitude of interests, both legislative and scientific, its open meetings, and its exhibits, is an event of the greatest importance. While no one can get it all, nevertheless, impressions can be gained that will make one familiar with many of the activities in which the association is engaged.

We have with us this evening as one of our honor guests a man who has been representative of the great work carried on in the Councils of the American Medical Association for many years. He has been identified, as you all know, with the Judiciary Council, and has played a most important part in making the American Medical Association what it is today. He exemplifies what in my opinion is the ideal of every medical man—namely to strive to make himself most skilled in his profession and at the same time to do something to promote the best interests of his fellow practitioners and of public welfare. This Doctor Harris has done. He is widely recognized as one of our most able surgeons and at the same time he has devoted much of his life to solving the problems of his fellow practitioners. All honor to him—and I trust

that the time will soon come when the American Medical Association will give him more concrete evidence of appreciation.

It is of interest to note the changing attitude of our profession toward organization and the solution of medical, economic and allied problems. The term "medical politician" was formerly employed as a term of reproach. It was applied to that type of individual whose sole endeavor was political, who busied himself with efforts to land either himself or members of his machine into the offices of the medical organization, be it county, state or national. While some of this spirit still exists in some states and to some extent in our national organization, I am glad to say that there is mighty little of it existing in the Minnesota State Medical Association. Instead of medical politician I would suggest statesman, and as such refer to the physician who devotes some of his time and endeavor in legitimately advancing the best interests of his profession, together with that of public welfare. This is necessarily done at a sacrifice of his personal interests and is deserving of praise and commendation rather than cynicism. In fact, I am quite certain that any medical man who devotes some time to this purpose becomes a broader man, and, as a result, a better practitioner. As an example of a medical statesman, if you please, I can refer to no one more worthy of the name in our ranks than our new President, Dr. C. B. Wright. The time, effort, and sacrifice that he has made, not to mention the wise counsel and excellent judgment that he has employed in furthering the best interests of this Association, have been justly recognized. His election to the highest office that we could bestow was most appropriate, for it could have been given to no one who was more worthy.

The question may well be asked, "What shall we do with our ex-presidents?" Herman Johnson has solved this problem. Although he may no longer wear the royal crown or the imperial

purple, he still sticks to the typical American coat-of-arms, namely his shirt sleeves. If ever a man literally tore off his coat and got into the game in these last few years, it has been Herman Johnson. The long list of things accomplished for our Association during his benign autocracy is too long to detail and is familiar to you all. In fact, his era has been of such importance that this Association might well regard it as the beginning of our modern history, and refer to events as happening one or two years B. J. or A. J. as the case may be. However much he may try to hide his light under a bushel; however generous he may be in giving credit to his associates on the Legislative Committee and to the other fellow; however appreciative he may be of the valuable aid rendered him by many members of our Association, nevertheless, the fact remains that, if it were not for Herman Johnson, the remarkable legislative program which has been accomplished this year would not have been possible. Those of us who have worked with him know what a sacrifice he has made, not alone of his practice and financial returns, but that he gave unstintingly of his energies, his health and his very life blood for the cause. It would be impossible for this Association adequately to show its appreciation of what he has done in our behalf. We might create for him the position of President Emeritus, but that would insinuate advanced age and that his period of active usefulness was over. This is farthest from our thoughts, for we hope that we may long continue to benefit by his wise counsel and his active coöperation in solving our problems. However, as a token of our appreciation of the distinguished services you have rendered the Minnesota State Medical Association, Doctor Johnson, I have the honor, as their representative, to present you with this watch. May the hours that it measures in your future years be filled with happiness and good health.

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# THE TREATMENT OF ACUTE EMPYEMA\*

J. M. HAYES, M.D.

Minneapolis

IN this paper I have considered the treatment of only the acute form of empyema. Proper treatment of the acute type is the best assurance against a chronic condition.

Previous to the World War the treatment of acute empyema gave the average surgeon little concern. Lilienthal says: "For years the primary treatment of empyema of the thorax has been neglected. The cut and dried methods of the past decades with an appalling mortality have gone on with practically no improvement because of the lack of investigating interest on the part of the surgeon." Moschowitz says: "Many surgeons labored under the delusion that their results in this condition were much better than they were."

Few statistical studies had been made up to the time of the World War. The few authentic statistical studies which had been tabulated up to this time reveal the inadequacy of the standard treatment.

Wilensky working with Moschowitz, in 1914, tabulated statistically the results of two hundred and ninety-nine consecutive cases treated in Mt. Sinai Hospital, during the preceding ten years. The mortality rate was 28 per cent. Peck and Cave studied ninety-four cases in the Roosevelt Hospital, between the years 1915-1920. The mortality in this series was 19.1 per cent. Lilienthal and Ware, in 1916, studied sixty-six cases in Mt. Sinai Hospital. They record a mortality of 20.5 per cent. Eggers, at Camp Jackson, studied seventy cases before the great epidemic of 1917. The mortality rate was 27 per cent.

Cameron of Guy's Hospital reported a 70 per cent mortality in children during the first year, and a 50 per cent mortality during the second year. Of fifty-nine cases with early rib resection thirty-nine died and thirteen recovered. Holt reported two hundred and four cases of empyema in children with a mortality of 74 per cent during the first year and 59 per cent mortality during the second year.

Other figures up to this time agree essentially with the above mentioned. Considering the fact that these men and the hospitals in which they worked rank among the highest in this line of work, these figures indicate the inadequacy of the established method of treatment for acute empyema. Early open operation with resection of one or more ribs was the prevailing method of treatment up to this time.

With the uncomplicated pneumonococcic type of empyema, the immediate results with this form of treatment were fair. It has been generally considered that practically all of the ordinary civil cases are the purely pneumonococcic type.

Slide #1.

## STATISTICAL STUDIES OF EMPYEMA PATIENTS BEFORE THE WORLD WAR.

BY WHOM REPORTED	DATE	PLACE	NO. OF CASES	MORTALITY RATE.
Wilensky	1904-1914	Mt. Sinai Hospital	299	28%
Peck & Cave	1915-1920	Roosevelt Hospital, N.Y.	94	19.1%
Lilienthal & Ware	1916	Mt. Sinai Hospital	66	20.5%
Eggers	1917	Camp Jackson	70	27%

Pleural exudates from five hundred and seventy-four of these cases were examined in Mt. Sinai Hospital. One hundred and thirty-three of these contained streptococci. Others have been found on close examination to contain staphylococci or a mixture of all three organisms. The tubercle bacillus may be present and not be detected in the early stages. These facts would suggest that we must not too readily come to the conclusion that we are dealing with an uncomplicated type of pneumonococcic empyema.

The prevalence of the streptococcic type of empyema during the World War is well known. It was in this type especially that the early open drainage with rib resection proved disastrous. The mortality rate during the early epidemic in the army cantonments was so appalling as to bring about the appointment of a special Empyema Commission, by the United States Surgeon General. This commission was made up of thoracic surgeons of the medical corps of the

\*Read before the annual meeting of the Minnesota State Medical Association, Duluth, Minnesota, June 30 to July 2, 1927.

United States Army. At Camp Lee, West Virginia, it took up its work of investigating and devising means for obtaining better results with empyema patients.

The mortality rate at Camp Lee, under the standard treatment of early open operation was 48 per cent. Replacing this method by early aspiration and later partially closed drainage and irrigations with Dakin's solution, the mortality in these cases was reduced to 4.3 per cent.

The preliminary report of this commission with these remarkable results aroused the interest of those treating empyema in other army camps throughout the United States. Stone of Fort Riley, Kansas, soon turned in a detailed report on three large series of cases. In the first series of eighty-five cases between October, 1917, and January, 1918, with early open drainage, his mortality was 61.2 per cent. In a second

with a mortality rate of 48 per cent with early open drainage. Later with the closed method of Mozingo he reported a mortality rate of 7 per cent. Sherrill from Camp Sherman reported a 50 per cent mortality with early open drainage; with the closed method 5 per cent. From Camp Lewis, a mortality of 25 per cent was reported with early open drainage. Later, seventeen cases were treated by the closed method with no mortality.

No doubt the virulence of the bacteria had considerably abated since the beginning of this epidemic. This accounted to some degree for the reduction of the mortality rate in these patients.

However, it is true that Camp Lee and other camps at which the closed method of drainage had been adopted were reporting a very low mortality, while in others where the early open oper-

SLIDE #2.

Slide #3.

STATISTICAL STUDIES OF EMPYEMA PATIENTS MADE DURING THE WAR.

STATISTICAL STUDIES OF EMPYEMA PATIENTS FOLLOWING THE WORLD WAR USING CLOSED METHOD OF TREATMENT.

BY WHOM REPORTED	DATE	NO. CASES	PLACE	MORTALITY WITH EARLY OPEN DRAINAGE	MORTALITY WITH CLOSED DRAINAGE
Empyema Commission 1917-1918	140	Lee, W. Va.	48%	4.3%	
Stone.	1917	275	Fort Riley	61.2%	9.5%
Rodman.	1918	240	Camp Dovee & Ogleshorpe	46%	10%
Dederich	1917-1918	147	Camp Pike	46%	7%
Sherrill.	1917-1918	Not Stated	Camp Sherman	50%	5%
Camp Dodge	1917-1918	----	Camp Dodge	64.8%	5%
Camp Lewis	1918	----	Camp Lewis	25%	No Mortality.

BY WHOM REPORTED	DATE	NO. CASES	PLACE.	MORTALITY RATE.
Mozingo.	1919	114	Walter Reed Hosp.	2.6%
Whittimore.	1920-1924	100	Mass. Gen. Hosp.	6%
Patterson.	1922-1925	21	Bridgeport Hosp.	4.7%
Manson.	1920	43	-----	No Mortality.
Flint & Douglas.	1920	102	-----	No Mortality.
			Yale Clinic.	No Mortality.

series of ninety-six cases between January, 1918, and August, 1918, treated according to the principles laid down by the Empyema Commission, the mortality rate was reduced to 15.6 per cent. In a third series of ninety-four cases treated by the same method with added experience and skill the mortality was reduced to 9.5 per cent.

One camp after another throughout the United States took up this line of treatment and reported favorable results. Camp Dodge at first reported a mortality of 64.8 per cent. Later the mortality was reduced to 5 per cent. Rodman saw two hundred and forty cases, between September 15 and October 10, 1918. With early open operation the mortality rate was 45 per cent. Later with the closed method it was reduced to 10 per cent. He states that at first he was opposed to the use of Dakin's solution in the pleural cavity but became converted to its use during this time. Dederick, from Camp Pike, reported one hundred and forty-seven cases

and was still the method of choice, a very high mortality rate existed.

Many accurate statistics have been tabulated since the war which tend to show that the principles suggested by the Empyema Commission paved the way for a decided advancement in the treatment of acute empyema. Mozingo of Walter Reed Hospital, who popularized what may be termed the actual closed method of drainage, reported one hundred and fourteen cases with three deaths. Manson, following the method of Mozingo, reported forty-three cases with no deaths, no secondary operations, and no chronic conditions. Flint and Douglas of the Yale Clinic reported one hundred and two cases with no deaths and no chronic cases. Whittimore, from Massachusetts General Hospital, reported one hundred cases with six deaths. Most of these six cases had not been treated according to the recently established methods. He emphasizes early operation by the closed method,

under local anesthesia, and the intelligent use of Dakin's solution. Binnie, from the Boston City Hospital, between 1920 and 1924 reported one hundred cases with a mortality of 13 per cent. These cases were not treated by any one man, but rather promiscuously by various men, without regard for the principles laid down by the Empyema Commission.

As suggested by Heuer of Johns Hopkins, complications and chronic conditions usually result from inadequate treatment of the acute condition. In the cases studied by him the mortality rate was 50 per cent in complicated cases, while in uncomplicated cases it was 6.5 per cent. He states that early open drainage produces an inevitable pneumothorax, disturbs the mediastinal structures, lessens the vital capacity, and impedes the expansion of the lung.

Closed drainage, properly carried out, not only eliminates the above hazards to a large extent, but is more comfortable to the patient and tends to prevent complications and chronic conditions.

For dissolving the plastic exudates which tend to hold the lung in collapse, and cleaning out the pleural cavity, nothing, so far, surpasses Dakin's solution irrigations. Moschowitz says: "The far reaching observations at the War Demonstration Hospital of the Rockefeller Institute have taught us that empyema cavities can be rendered bacteriologically sterile by means of the Carrel-Dakin treatment." Here it was first shown that these cavities could be safely irrigated with Dakin's solution and could be made sterile by this means even to the point of closure without recurrence.

Stephens has shown that of fifty-six cases treated with simple drainage without Dakin's solution irrigations there were fourteen recurrences, or 25 per cent. While of sixty-seven cases irrigated with Dakin's solution, there were only eight recurrences, or 12 per cent. Graham says that Dakin's solution not only sterilizes the pleural cavity but its solvent action effects a decortication of the lung and thereby obliterates the empyema cavity.

Moschowitz, Graham, Lilienthal, and other prominent thoracic surgeons who have made an exhaustive study of this condition believe that with prompt diagnosis, with early closed drainage, and intelligent use of Dakin's solution irrigations, the mortality rate in empyema patients

should be reduced to a minimum, and few chronic cases result. Such mutilating operations as the Shede, Estlander and Delorme would then be little called for.

Regardless of the type of empyema, the early closed method is the safer. After the general condition of the patient has improved and the size of the cavity is reduced to a small capacity, little harm can come to the patient from open drainage. Occasionally, the process will become stationary when the capacity of the cavity is down to two or three ounces. In such cases resection of the ribs over this cavity, allowing this portion of the chest wall to collapse, is the method of choice. Many methods have been suggested for instituting closed drainage and maintaining negative pressure, but usually the simplest is the best. Forced inspiration usually aids lung expansion. Blow bottles serve the purpose well.

As soon as empyema is recognized, the exact location of the pus should be demonstrated by means of the *x*-ray. A needle, at least twenty-two gauge, is then inserted at the lowest point to confirm the presence of pus. A 22 F. catheter should then be introduced at this point by means of the trocar and cannula. If the empyema is at the base of the lung, the site of election for drainage is usually in the eighth intercostal space in the posterior axillary line.

The greatest precaution must be taken in inserting the catheter to prevent the entrance of air into the pleural cavity. Many methods have been devised for fastening the tube in place, once we have it inserted. Four adhesive strips about two and a half by six inches serve the purpose well, two strips extending vertically and two horizontally, closing the opening tightly about the tube. A narrow strip of adhesive about the tube, through which a safety pin passes, keeps the tube from slipping out of place. If the cavity contains more than a pint of pus it should not all be evacuated at the first session. Dakin's solution irrigations are given every two hours during the first four or five days or until the cavity shows a marked decrease in size and septic symptoms subside.

When the size of the cavity is reduced to two or three ounces there is no objection to doing a rib resection for open drainage or resection of all the ribs over the cavity, thus collapsing this part of the chest wall. However, when the sit-

uation is explained to the patient, he usually chooses to continue the closed method, even if it may require a little more time.

The tube may be removed when no more bacteria can be found in the discharge and the cavity practically obliterated. The patient should be watched closely for several months or even years afterwards, for possible reaccumulation of pus in the pleural cavity.

I have three cases which fairly well illustrate the various types of empyema.

*Case 1.*—Baby B., two years of age, contracted pneumonia. Empyema developed during the pneumonia process but was not recognized early. Several aspirations were done when the condition was recognized, and closed drainage was instituted. The temperature was 105 degrees when drainage was started. This was

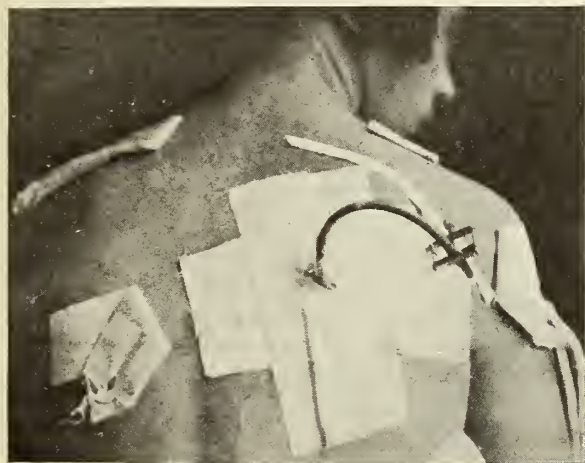


Fig. 1. A simple method of instituting closed drainage.

a streptococcic empyema such as we saw during the war. The child developed otitis media, suppurating glands of the neck, and ran a rather stormy course, but the cavity was finally made sterile and closed down on the tube. The tube was removed after a little over two months from the time of its insertion. The child has been watched closely since for recurrence, but there has been none so far.

*Case 2.*—Miss E., aged 32, contracted unilateral pneumonia in April, 1926. After two weeks the pneumonia subsided. A few days later an interlobar empyema was recognized on the left side. Closed drainage, after the method of Mazingo, was instituted. Irrigations with Dakin's solution were carried on every two hours for the first five days. The patient developed a bronchial fistula and Dakin's solution irrigations were discontinued for a short time. After a few days the Dakin's solution irrigations were again used in spite of the fistula. The patient was placed in such a manner that the cavity was in the most dependent position and soon we learned the amount of Dakin's solution that could be used without giving the patient distress. After four or five weeks we suggested rib resection to the

patient, but she preferred to wait and take a chance at the cavity closing without resection. In a little over six weeks the cavity was sterile and almost obliterated. The tube was then removed and the patient watched closely since.

*Case 3.*—Mr. F., forty-nine years of age, had pneumonia in 1916, followed by empyema. The accumulation of pus was so great that it practically collapsed his right lung. The condition was not recognized until he began to raise large amounts of pus. He hoped to clear up the condition by raising the pus. This continued for nineteen months until 1918, when he was brought in on a stretcher and closed drainage instituted. After the cavity was fairly well cleaned out and the patient's condition improved, a Delorme decortication of the lung was done. There was some expansion following this but the lung did not come out to more than one-third of its normal size. The cavity was again irrigated with Dakin's solution and in 1921 was allowed to close as a sterile cavity. For three years this cavity remained apparently sterile, but in 1923 he developed toxic symptoms and examination revealed the presence of pus in this cavity. Closed drainage was instituted and Dakin's solution irrigations again begun. His symptoms cleared up and the patient returned to work and has been working continuously since. For the past two and a half years he has an open drainage tube, and changes the dressings himself. He does not feel that he can take the time for further treatment.

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### INTRODUCING NEW DRUGS

The report on blueberry leaf extract which the Council on Pharmacy and Chemistry publishes, illustrates the praiseworthy and increasing tendency on the part of the large pharmaceutical firms to adopt the ideal method of introducing a new drug, namely, demonstration of the drug's chemical identity and uniformity; report of animal experiments giving promise of therapeutic value; report of clinical trials under the auspices of the discoverer; and provision for confirmatory study of the drug's therapeutic worth by independent investigation. What a contrast to the unscientific and haphazard flooding of the market with new and untried drugs that formerly obtained here and still obtains abroad! The change has arisen from the increasingly critical attitude of the American medical profession. This, it seems reasonable to believe, is due to the faithful and persistent work of the Council on Pharmacy and Chemistry. (*Jour. A. M. A.*, November 5, 1927, p. 1610.)

### BLUEBERRY LEAF EXTRACT

The Council on Pharmacy and Chemistry publishes a preliminary report on a blueberry leaf extract which has been proposed for use in the treatment of diabetes. A report on this product was read at the last meeting of the American Medical Association by F. M. Allen, who had continued the work begun in Germany by Wagner and others. The product used by Allen was made by E. R. Squibb & Sons; it is not being marketed and will not be offered to physicians in general until its usefulness has been demonstrated. The Council published its preliminary report to call attention to the possible usefulness of the blueberry leaf extract used by Allen. At the same time the Council points out that thus far no standards have been developed which will insure a uniform product; that the actual value of the product in the treatment of diabetes has not yet been proved; and that such proof must come from workers who have the necessary clinical opportunities and laboratory facilities on which to base judgment. (*Jour. A. M. A.*, November 5, 1927, p. 1607.)

# IMMOBILIZATION IN THE TREATMENT OF PULMONARY TUBERCULOSIS\*

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THE title "Immobilization in the Treatment of Pulmonary Tuberculosis" brings to mind several thoughts. It recalls Krause's pertinent statement that "rest remains our sovereign remedy for tuberculosis." It reminds one that rest in bed alone offers sufficient lung immobilization, a relative one only to be sure, to attain an arrest of from 80 to 90 per cent of first stage or minimal cases of lung tuberculosis; that approximately half of the second stage or moderately advanced lesions are restored to a productive capacity by bed rest alone, and a goodly number of far advanced patients also.

And then our attention swings over to those other cases so frequently classed as hopelessly ill, for whom simple bed rest is inadequate. Among this group we find those whose disease proceeds apace despite the most skillfully supervised sanatorium regime, and also those whose lesions smolder along indolently, resenting any attempt at exercise by exacerbation or extension or metastasis, and still again that fairly large number whose general condition returns to normal but with the tenacious persistence of cough with bacillary sputum. What further can be done for these unfortunates, the great majority of whom are doomed indubitably to fill early consumptive graves if left unaided? Can anything in the way of more efficient lung immobilization be instituted?

There have been a number of answers to these important questions in the years gone by; some of them productive of indifferent results, others good and still others excellent. And all of these answers hinge on the basic principle of rest. Efforts have been made to restrict the movements of the chest wall by external force with weighted bags, by training patients to lie on the more diseased side, with tight adhesive strapping, with plaster casts around the chest, with light metal jackets having facilities for producing pressure by inflating rubber pockets, etc. The importance of slow and strictly diaphragmatic breath-

ing has been stressed in order to obviate costal respiration which affects chiefly the upper lobes. All of these measures have had their enthusiastic advocates and probably have done some good, though eventually not measuring up to the high expectations of their respective advocates.

Three other measures for securing more perfect immobilization of a tuberculous lung have been used and proved sufficiently efficacious to warrant our incorporating them in our standard armamentarium. Artificial pneumothorax, extrapleural thoracoplasty and avulsion of the phrenic nerve in my opinion have arrived to remain permanently, pending the discovery of some specific chemotherapeutic agent.

I do not purpose taking up the historical and technical phases of artificial pneumothorax nor considering its complications and dangers except to let fall Woodcock's remark that "there are dangers in connection with the production of artificial pneumothorax, but the greatest—and about this let there be no mistake—is the neglect in which it is held."<sup>1</sup> Neither shall I dwell on the history of thoracoplasty or phrenicotomy, the technical features of which are not within the field of this paper. But I do want to consider briefly the indications for each, results and comparative values.

Since 1912 when the widespread use of induced pneumothorax began in this country there has been a noteworthy change in the opinion of most experienced men regarding the indications for inducing pulmonary collapse for tuberculous disease. Recurrent and ungovernable hemorrhage still retains its place as one of the cardinal indications. But the custom of considering pneumothorax only as a last resort measure for far advanced disease has been modified by thoughtful and progressive workers. The substance of this modification is that, irrespective of anatomical extent, any unilateral lesion progressive in nature, despite strict bed rest, warrants an attempt with induced pneumothorax, provided, of course, that contra-indicating complications are absent. The two cardinal indica-

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tions for using collapse therapy in treating pulmonary tuberculosis, therefore, are, repeated or uncontrollable hemorrhage and progressive unilateral disease, be that disease, first, second or third stage. And bear in mind that a goodly percentage of these cases are acute or subacute in nature.

The first indication for the operation of extrapleural thoracoplasty is that the case be one favorable for pneumothorax therapy but pleural adhesions either have prevented the introduction of any air at all or a useless partial collapse has been effected. Here in general, as with air collapse cases, we are limited essentially to one-sided lesions. But there are much finer considerations one must note in selecting patients for this extensive rib resection operation. It must be borne in mind that we are submitting persons with a notoriously debilitating disease to not one but two and possibly three or four truly major operations. The better the general condition of these patients the less will be the operative mortality. Archibald expresses this succinctly in describing the ideal thoracoplasty case as the "*good chronic*" one. Lilienthal remarks: "Of special significance is the stage of the disease with which we are dealing. The older the lesion the better the chances of cure; that is, the more fibrous or productive are, as before stated, more favorable than the recent or progressive."<sup>2</sup> More specifically this implies a comparatively good general condition with relative freedom from toxemia. Please note the dominant theme of chronicity in these indications as contrasted with the relatively more acute trend in pneumothorax indications.

Hemorrhage is usually mentioned as an indication for thoracoplastic collapse and to me it seems a rather dubious one. The marked physical trauma incident to this operation is getting somewhat away from the rest and quiet so imperative to a bleeding lung. In treating tuberculous empyema which has failed to respond to repeated aspirations or to formalin in glycerine injections, thoracoplasty achieves brilliant results and in a much more satisfactory manner than other radical surgical operations because not only is pleural apposition achieved but the diseased lung is kept compressed (my thought here being of those empyemas which complicate therapeutic and spontaneous pneumothorax).

Avulsion of the phrenic nerve is of value

when used alone chiefly in unilateral basal tuberculosis. It has been used also in cases that have resisted air induction because of pleural synechia and who are too ill for immediate thoracoplasty, in the hope that it will afford sufficient immobilization to check the progressiveness of the disease, thereby restoring a more promising general physical condition so desirable before thoracoplasty is done. Sauerbruch thinks this operation on the phrenic nerve will diminish the tendency to effusion as a complication of artificial pneumothorax. Of most importance is the usage of this simple procedure, particularly by continental men, preliminary routinely to thoracoplasty. This I am doing at the present time unless the diaphragm is fixed by adhesions and it appears to me most rational because a lung which needs the additional rest and degree of collapse afforded by a formidable procedure such as thoracoplasty can stand and should have the additional rest and relaxation afforded by diaphragmatic fixation. And the time to do this is before surgical collapse, as it is comparatively easy then, whereas, afterwards, it may be exceedingly difficult due to the change in the normal position of the nerve resulting from the retraction and deformity following the rib operation.

Do the results of these measures designed to immobilize the lung warrant our continued usage of them? Saugman<sup>3</sup> in reporting 310 cases in whom successful pneumothorax was induced, notes 34 per cent working after two to ten years. Amberson and Peters<sup>4</sup>, in surveying the results in 139 patients, find 30 per cent living and working under conditions approximately normal. Rist,<sup>5</sup> in his series of 759 cases, has 52 per cent clinically well and working. In my own group of 130 pneumothorax cases 30 per cent are symptom-free and occupying a useful position in society.

Alexander<sup>6</sup> has collected 836 thoracoplasty cases reported since 1917. He found successful results in 33 per cent; a further 24 per cent were much improved, making a total of 57 per cent operative successes. There was a 12 per cent mortality within one month following the operation. I have resorted to thoracoplasty in twenty-three instances, with an initial mortality of 12 per cent. Eight, or 32 per cent, of these are in splendid condition with negative sputa; six of these are working.

Phrenicotomy alone has been used so infrequently that the figures are not impressive and very few are to be found. Sauerbruch<sup>7</sup> reports distinct improvement in seventeen out of sixty operated cases. I have resorted to it alone in only four cases, three of which were basal lesions and these were markedly benefited.

Before passing judgment on these figures it is well to reflect that no mild or transient malady has been under consideration. Progressive tuberculosis of the lungs is a deadly disease; it kills people, not quickly as a rule, but with awful certainty. And if we have a measure or combination of measures which when advisedly used will take a selected number of otherwise fatally ill persons and put back to work from one-third to one-half of them, there can be no doubt from a rational mind that the achievement is nothing short of brilliant. Better results could have been, and certainly will be, accomplished with improvement in technic and a wider appreciation of suitable indications. For the present, however, let us be content with the firm conviction that the virtue of these procedures to accomplish more efficient lung immobility is definitely proved beyond any discussion.

Before passing on to a short consideration of the comparative value of the first two of the three procedures just alluded to, I would like to insert a word regarding the place in which these measures should be instituted. There is no question in my mind but that the modern sanatorium is the ideal place. The cures effected by more efficient immobilization are not over-night accomplishments. Months and months of intelligent and skilled supervision are necessary and in the home or general hospital this is well nigh impossible. And as a corollary it is obvious that our sanatoria should be properly equipped.

The comparative value of pneumothorax treatment and thoracoplasty is beginning to engage our attention. And I presume it is natural, for whenever any malady, social, spiritual, economic, physical or what not, is combated successfully by more than one measure there eventually arises the question as to which is the most satisfactory one for general use. And in this particular field the discussion has been stimulated by the figures of Alexander showing good results following thoracoplasty in 57 per cent of cases compared with good results in

pneumothorax varying from 30 to 52 per cent, the 52 per cent being those of Rist, which is the most recent large series I have seen. Those who assert that here is sufficient evidence for the use of thoracoplasty to the exclusion of pneumothorax are reasoning superficially. Such a conclusion would, of course, be acceptable, were all of Alexander's cases exact duplicates of, for instance, Rist's. But who ever heard of even two cases of lung tuberculosis being twins in every detail? To consider the reports of ultimate results alone is scratching the surface only.

The indications for the application of pneumothorax and thoracoplasty I have outlined to you; essentially progressive disease for the one, chronic more or less stationary for the other, or, expressed in a clearer pathological manner, predominantly exudative lesions for pneumothorax, for thoracoplasty those essentially proliferative. Can there be any question as to the choice of these two procedures in treating for instance an extensive lesion of recent origin attended by marked toxemia? In order to check profuse hemorrhage is thoracoplasty with its inevitable and marked physical insult to the chest to be compared with the gentle, painless and bloodless insertion of a pneumothorax needle? Then, too, the initial mortality following thoracoplasty in the first month is from 10 to 20 per cent. It is practically zero with pneumothorax. Thoracoplasty affords permanent collapse and if disease appears in the good lung our hands are tied. With pneumothorax partial or complete expansion is very possible and I have had occasion to utilize this factor enough to know its true worth. And is it not true that exudative types of tuberculous disease extend and metastasize much more frequently than do the proliferative ones?

We must look at the other side of the fence. Thoracoplasty patients are through with active measures as a rule with the completion of their second stage operation. Collapse cases must return for refills. Surgically collapsed individuals are not annoyed as a rule by pleuritic effusions (some of which become purulent) as are the majority of air collapsed persons. And, too, pleural shock, air embolus, perforation and rupture of the lung are to be thought of only with pneumothorax cases.

But the crux of the matter is that basically we are using and should use these remedies for

types of disease which differ radically. For, by and large, pneumothorax people are those who by themselves exhibit a low resistance to the tubercle bacillus or else are overwhelmed by an enormous dosage. And thoracoplasty cases as a rule are those in whom is found testimony of a magnificent defense as witnessed by abundant fibrosis. Is it not fair to assume, if thoracoplasty were done for all cases suitable for pneumothorax, that because of the high percentage of acutely or subacutely ill persons in this class the initial mortality would jump to a forbidding figure?

Why should we even attempt to compare these two measures or to choose between them? Why

not be thankful we have them both, using each when indicated, supplementing or replacing pneumothorax by thoracoplasty as we must at times, and allot each credit where credit is due.

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#### THE MOUNT CLEMENS BATHS

The Mount Clemens mineral springs are unusually strong solutions of salines, giving off the pungent odor of hydrogen sulphide. They are not thermal springs; the water is heated in bath houses. Patients with chronic rheumatic, neuritic and neuralgic disturbances are especially likely to be benefited by such baths. The use of hot procedures is dangerous in all conditions of profound general weakness, enfeeblement of the heart and degeneration of the arteries. Patients with a tendency to rise in temperature should also not be subjected to heat procedures. Medical supervision is absolutely required to secure good results. What folly it is for people to go to Mount Clemens and other bathing resorts, jump into hot mineral baths and drink a lot of strong saline water, trusting to Providence to take care of the rest! (*Jour. A. M. A.*, November 5, 1927, p. 1625.)

#### SOLUTION OF PITUITARY FOR INDUCTION OF LABOR

The application of solution of pituitary to the nasal mucous membrane as a means of induction of labor has been reported on. Under direct vision with reflected light and the use of a speculum, the nose is cleansed and a pledget of cotton, moistened with 1.25 c.c. of solution of pituitary, is inserted snugly under the anterior end of the inferior turbinate of the nostril. At the end of an hour or two the pledget is withdrawn. If necessary, a fresh pledget is applied to the other nostril. The procedure is reported to have been successful in every one of fifty-six cases in which it was used. In a series of twenty-four cases to test the method in normal pregnant women during the last month of pregnancy and at term, there were nine failures. All the babies were born alive. (*Jour. A. M. A.*, November 12, 1927, p. 1696.)

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IN a brief presentation of such a broad subject as the physiology of the liver, I can hope to do nothing more than arouse interest in the largest and one of the most important organs of the body. The magnitude of the subject can be estimated from the fact that few physiologic activities of the body can be considered without the inclusion, directly or indirectly, of some phase of hepatic function. I shall enumerate only certain of the major functions of the liver and emphasize certain phases of its activity which at present appear most significant in clinical medicine.

Life in all the higher organisms is dependent on the constant activity of the liver in regard to one of its functions, the regulation of the concentration of sugar in the blood. The results\* of experiments on animals from whom the liver has been removed, and experiments and clinical observations on the action of insulin, have demonstrated that a certain minimal concentration of sugar in the blood is essential to life in the higher organisms. As a matter of fact, the concentration of sugar in the blood may be included in the group of physiologic constants along with the temperature of the body, the number of circulating red cells, the amount of hemoglobin, the pulse and respiratory rate, the blood pressure, and so forth. Normally the concentration of sugar in the blood remains constant within narrow limits. When the amount decreases below a certain critical level, definite symptoms appear and on further decrease, death ensues. There is a great possibility for extensive and rapid changes in the blood-sugar level. For several hours after the ingestion of carbohydrate, glucose is taken into the blood stream. The body utilizes glucose for the production of heat, for muscular exertion, and possibly for other cell activities, at a variable rate. Also glucose is removed from the blood stream to be stored as glycogen or converted into fat. Through all this wide range of variation of entrance and loss of

sugar to the blood stream, the liver smooths out the extremes of the changes and thus the concentration of the sugar in the blood remains fairly constant. Without such function not only would there be failure to supply available glucose at the particular time needed, as during severe muscular exertion, but the blood-sugar would decrease to a level incompatible with life. Although it has been definitely established that the liver is the most important agent in the performance of this vital function, the manner of performing it is not known.

The liver not only has to do with the glucose of the body which is ingested in some form of carbohydrate, but it also is responsible for the formation of glucose from protein. Only a part of the protein ingested is used as such; the remaining protein must be utilized in some other form. Most of the latter portion is deaminized, the nitrogenous by-product excreted as urea, and the remainder converted to glucose. The liver is essential for this process and the blood-sugar level is maintained in the absence of available carbohydrate, by making glucose from protein. How the liver performs this act is not known, nor is it known whether or not hepatic activity can convert fat into glucose.

The liver is also of importance in another phase of protein metabolism, that relative to the purines. Another important nitrogenous by-product, besides urea, is uric acid. In some species of animals almost all the nitrogen is excreted as uric acid, while in other species little is excreted in this form. The dog belongs to the latter group. Normally there is only a trace of uric acid in the blood and very little is excreted in the urine. However, after the liver has been removed, uric acid appears in the blood and large amounts are excreted in the urine. If uric acid is injected into the normal dog it is destroyed quickly, but if it is injected in the dehepatized dog, it remains unchanged in the blood and tissues or is excreted in the urine. These experiments demonstrate that the dehepatized animal cannot destroy uric acid. What bearing this fact may have in a consideration of the func-

\*From the Division of Experimental Surgery and Pathology, The Mayo Foundation, Rochester, Minnesota. Read before the Minnesota State Medical Association, Duluth, Minnesota, July 1, 1927.

tion of the liver of man cannot as yet be determined, since normally much of the uric acid is not destroyed in the human being. On the other hand, the ability of the dog's liver to destroy uric acid appears to be more easily impaired than any of the other known functions of the organ.

Secretion of bile is the function of greatest interest to most clinicians. In this regard the liver is similar to other organs that produce external secretion. While much is known concerning bile and its secretion, there is certainly much yet to be learned. Bile is secreted more or less continuously but is accelerated in proportion to the activity of the gastro-intestinal tract. The ingestion of food is followed by an increase in the flow of bile, certain foods causing a greater secretion than others. The mechanism which causes an increase in the secretion of bile following the taking of food is not known. There are three main constituents of bile, cholesterol, bile salts and bilirubin. Little is known concerning the origin, function or fate of the cholesterol secreted in the bile. It appears that the bile salts are found in the liver and that their main function has to do with the preparation of fats for digestion. Bile pigment is probably a waste product formed from hemoglobin by the reticulo-endothelial cells and excreted by the hepatic cells.

The most interesting clinical symptom associated with the bile-secreting function of the liver is jaundice. While it may not be wholly appropriate to discuss jaundice in relation to the physiology of the liver, it should be noted that the conception of the extrahepatic origin of bile pigment necessarily changes the conception of the mechanism of jaundice, especially that of obstructive jaundice. The former usual conception of the processes involved in the development of jaundice following occlusion of the biliary ducts ascribed to the liver an active part in adding bilirubin to the blood. It was assumed that the hepatic cell made the bile pigment and if the biliary outflow was prevented and the bile was dammed back into the biliary system, it was assumed that the bile pigment accumulated in the hepatic cell until it was reabsorbed into the blood or lymph and bilirubinemia resulted. The knowledge that most of the bile pigment was made outside the liver and that the hepatic cell excreted but did not make it, entirely changes the conception of the mechanism of obstructive jaundice. The he-

patic cell apparently only excretes the biliary pigment. The mechanism of obstructive jaundice, then, is simply the prevention of excretion of the biliary pigment which is formed extra-hepatically.

The liver performs many other functions, most of which are but little understood. It should be noted that the liver contains another important group of cells other than the hepatic cells, namely, the stellate cells. These cells belong to the group which is capable of engulfing foreign material and they are important agents in removing foreign particles from the blood which passes through the liver. They also probably are significant in immunity, anaphylaxis, and similar processes.

The clinician, especially the surgeon, is more interested in the biliary tract than in any other portion of the liver, not only because it is so often the site of pathologic processes but because it is possible to treat with considerable success many of the lesions surgically. Besides the mechanism of secreting bile, three other physiologic activities are noteworthy in the biliary outflow system, namely the filling and the emptying of the gallbladder, and the discharge of bile into the intestine. These three processes are so closely related that it is difficult to consider them separately.

The gallbladder fills by virtue of resistance to the discharge of bile into the duodenum. It is believed that the mechanism producing this resistance is due to the tone and peristalsis of the duodenal wall, or to a special sphincteric mechanism around the common bile duct. The preponderance of evidence thus far supports the view that a special sphincteric mechanism is responsible for filling the gallbladder. Of even more interest physiologically than how the gallbladder fills is when it fills and what proportion of bile secreted by the liver enters the gallbladder. Available evidence indicates that the gallbladder fills between digesting periods, but when it becomes well filled with highly concentrated bile, little more bile enters, regardless of the activity of the gastro-intestinal tract. If this is true, it would appear that the amount of bile secreted by the liver and which enters the gallbladder would depend not only on the amount and time of taking food but also on the character of the food.

To some extent the filling of the gallbladder

and the discharge of bile into the intestine must bear a reciprocal relationship. This relationship is, of course, more clearly apparent with regard to the bile in the hepatic duct. As I have stated, the facts concerning the discharge of bile into the intestine are more easily explained on the basis of action of a special sphincteric mechanism around the duodenal end of the common bile duct. Of course it is obvious that changes in the tone of the duodenal wall and peristalsis of the duodenum can affect the discharge of bile through the common bile duct, but such activity will not explain all the known facts concerning the passage of bile into the duodenum. It should be clearly recognized that this special mechanism for regulating the discharge of bile into the duodenum has to do primarily with the filling of the gallbladder and not with its emptying. Furthermore the mechanism is specific for a functioning gallbladder, as animals that normally lack a gallbladder do not possess it.

It is no longer doubted that the gallbladder empties and that it can empty by the contraction of its own intrinsic musculature. Whether or not changes in abdominal pressure, peristalsis of the duodenum and other extraneous factors are of any significance to the normal mechanism of emptying of the gallbladder or are even secondary factors, has not been definitely deter-

mined. At present the evidence is almost wholly in support of the view that the contraction of the muscle in the wall of the gallbladder is the main, if not the only, mechanism involved in the emptying of the gallbladder.

Although considerable is known concerning the physiologic action of the gallbladder, it is not certain that its main functions have been discovered. From the data at hand, the mechanism of the biliary tract can be postulated as follows: Resistance at the duodenal end of the common bile duct causes bile to enter the gallbladder. This resistance is probably due to special sphincteric mechanism. The bile is concentrated in the gallbladder by the absorption of water; whether or not other constituents of bile are absorbed or whether any special substance is excreted by the mucosa of the gallbladder is not known. Following the ingestion of certain kinds of food, particularly certain kinds of fat, the gallbladder expresses its contents by contraction of its own intrinsic musculature.

This exceedingly brief review of the subject has only suggested some phases of the physiology of this great organ and its excretory mechanism. It is obvious that much more must be learned before many of the clinical problems associated with the liver and biliary tract can be solved.

#### BROADCASTING BUNCOMBE

In the not very distant past, the quack and the fad-dist had the entrée—at advertising rates—to the majority of the newspapers of the country, and thus was made the point of contact between sucker and suckee. Today the majority of newspapers of wide circulation do not cater to the business of the medical fad-dist or the quack. With that avenue closed, it was but natural that radio advertising should be taken up. Broadcasting in the United States is a commercial venture. Generally speaking, the broadcasting station is out to sell time on the air. It is natural, therefore, that these stations should look with favor on any commercial organization that is willing to pay the price the station asks for puffing its particular line of goods. Thus it is that the radio fans have their ears assailed almost nightly with some pseudomedical fad, or the exploitation of some crude piece of quackery. One of the earliest entrants into this field was

the “Palmer School of Chiropractic,” which has its own broadcasting station, WOC, at Davenport, Iowa. Then there is that enterprising quack who specialized on “rejuvenation” operations and who owns and operates KFKB. Station WHT some months ago was broadcasting with great regularity the alleged virtues of a “patent medicine,” Salicon. WJAZ, not so long since, was telling the radio world the marvels of that ingenious faker, Professor Scholder. Over KTNT of Muscatine, Iowa, comes the story of the “Tangley Institute,” which has a sure-fire cure for varicose veins. WJBT of Chicago has described, via the ether, the marvels and virtues of the magic horse collar, the “I-on-a-co.” The Voice of Labor—WCFL—permits Dr. Percy Lemon Clark, of Chicago, to broadcast health misinformation. Over this same station—WCFL—comes also the “Restoro,” a base imitation of Wilshire’s magic horse collar. (Jour. A. M. A., November 19, 1927, p. 1786.)

## THE PRESENT STATUS OF CHOLECYSTOGRAPHY\*

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IN 1924 when Graham and his co-workers announced their discovery of sodium tetrabromphenolphthalein as a cholecystographic agent, it was generally hailed as better than former methods for roentgenologic diagnosis and was justly received with considerable enthusiasm. Cholecystography has, in my opinion, been one of the most remarkable advances made in medicine during the last decade. It not only provides a method of diagnosing disease of the gallbladder but has made possible a study of its function and physiology as well.

Calcium tetrabromphenolphthalein was the first drug used for cholecystography, but it was soon followed by sodium tetrabromphenolphthalein and sodium tetraiodophenolphthalein. These drugs were administered intravenously until Menees and Robinson, in 1925, reported a series of cases in which the drug was given orally in capsules hardened in formalin. Since then tetrabromphenolphthalein and tetraiodophenolphthalein have been used orally in variously coated and prepared capsules. At the Mayo Clinic, however, satisfactory results have been obtained by giving either of these salts in plain gelatin capsules.

In 1926 Graham introduced a new drug, sodium phenoltetraiodophthalein, the isomer of sodium tetraiodophenolphthalein, which can be used either orally or intravenously. Its advantages over the drugs previously reported are that it can be given in smaller doses and that it is satisfactory for demonstrating the functions of the gallbladder and liver simultaneously. The principal disadvantage is the expense of the compound. I have used it in a small series of cases both orally and intravenously. Although the cholecystograms were satisfactory they did not seem to possess any advantage over those resulting from tetraiodophenolphthalein given by mouth. Pribram, in July, 1926, recommended iodized atophan (diadophan) as a satisfactory drug for cholecystography. He administered it in cocoa, and claimed that excellent shadows of

the gallbladder were obtained. Later reports, however, are to the effect that grave reactions have followed its use. In December, 1926, Kirklin and Kendall reported the preparation and use of di-iodo-diethyl ether of di-salicyl-phthalein for cholecystography. This drug can be given orally in liquid form, and seems to be free from the reactions, such as nausea, vomiting and purging, which occasionally follow the oral administration of phenol compounds. The resulting cholecystograms are of excellent quality but, owing to further work relative to certain modifications and refinements in the preparation of the drug the supply had not been sufficient so that it could be used as a routine or recommended for general use.

### TECHNIC

The relative merits of the oral and intravenous administration of cholecystographic compounds have been widely discussed. Certain investigators are skeptical with regard to the oral method of administration and insist that all questionable data, such as faint shadows and failure to make the gallbladder visible, should be checked with the intravenous method. While the intravenous method gives assurance that a specified dose will get into the blood, thus avoiding all questions concerning absorption through the intestinal wall, the oral method is generally deemed safer so far as severe reactions are concerned, more facile of application, and hence more practicable. This question can be settled only after a large series of cases has been carefully studied and checked by both methods.

At the Mayo Clinic sodium tetraiodophenolphthalein is given by mouth as a routine. The dose varies from 3 to 5 gm., depending on the weight of the patient. He takes the measured dose in plain gelatin capsules, each containing 0.5 gm. of the salt, and takes it in broken doses immediately after the evening meal, which must be free from fats. He is instructed to drink water freely while taking the capsules and may take water at any time, but must abstain from food until after the sixteenth hour, when he is to

\*From the Section on Roentgenology, Mayo Clinic, Rochester, Minnesota. Read before the Minnesota State Medical Association, Duluth, Minnesota, June 29-July 2, 1927.

eat a meal rich in fats. Roentgenograms are made at the fourteenth, sixteenth and twentieth hours.

#### NORMAL CHOLECYSTOGRAM

The diagnosis of disease of the gallbladder from the cholecystogram is dependent on the following well known factors: (1) absorption of the drug from the intestinal tract, if the oral method is used; (2) excretion of the drug by the liver; (3) patency of the cystic duct; (4) a resistance mechanism at the end of the common bile duct, which causes the gallbladder to fill, and (5) ability of the gallbladder to concentrate the drug.

The normal cholecystogram should show good filling of the gallbladder, good concentration, and a homogeneous density. Slight deformities of contour have not been of significance in my experience. Density and size of the shadow of the gallbladder, as well as its situation, may vary at the fourteenth and sixteenth hour periods, especially the size, which is indicative of elastic walls. The shadow usually shows the greatest density at the sixteenth hour. The gallbladder should be empty or much smaller after a meal rich in fats or egg yolk. The size of the normal gallbladder varies considerably in the fasting state and, unless extremely large or undiminished in size at the twentieth hour, this factor may be ignored.

#### POSITIVE CHOLECYSTOGRAM

The most frequent and reliable cholecystographic sign of cholecystic disease is failure of the gallbladder to cast a shadow in any of the serial roentgenograms. One must be assured, however, that the patient has taken the drug, has not vomited it, has not taken food before the sixteenth hour, and that the films are of good quality and have covered the region of the gallbladder. Failure to secure a shadow by standard technic indicates one or more of the following conditions: (1) occlusion of the cystic duct; (2) contracted or rudimentary gallbladder with obliterated lumen; (3) impaired hepatic excretion of the drug; (4) inability of the gallbladder to concentrate its contents due to marked changes in the mucosa; (5) injury to the mechanism that produces resistance to the discharge of bile into the duodenum; in such case the resistance may not be sufficient to fill the gallbladder normally and the bile as secreted by the liver may pass

directly into the duodenum and the gallbladder fail to receive sufficient of the drug to cast a shadow; (6) congenital absence of the gallbladder or previous cholecystectomy, or (7) failure of the drug to be absorbed when given orally; in such cases, however, the drug can be readily seen in the bowel and if visible in large amounts a second examination should be made.

Persistent faintness of the shadow of the gallbladder is a less common but valuable sign. If a standard technic has been used a faint shadow is caused by defective concentration of the drug due to slight injury to the mucosa of the gallbladder, partial obstruction of the cystic duct, or stones or abnormally thickened bile in the gallbladder. It is most difficult to interpret such shadows, as the personal equation must invariably be considered. Normal concentration has a rather wide latitude, and extreme care must be used in the interpretation of a faint shadow. My experience with the oral method has shown that the shadow must be quite faint on all the cholecystograms and remain so, to justify a diagnosis of cholecystic disease. To determine the dividing line between normal and abnormal concentration is only possible with experience and careful checking with surgical data.

Mottling of the shadow of the gallbladder may be caused by stones and occasionally by papillomas; such mottling should be differentiated carefully from that caused by gas in the bowel. No variation in the size of the shadow indicates lack of normal elasticity and muscle tone. Often a thick-walled or otherwise diseased gallbladder will cast a shadow in the roentgenogram without the aid of dye. Usually the shadow is faint but occasionally it will be as dense as in a normal cholecystogram and will remain constant in size and density throughout the series. For this reason time may occasionally be saved if roentgenograms are made before the dye is administered. If a shadow is unquestionably that of a gallbladder or of a stone cholecystography will not be necessary unless a study of function is desirable.

Gross deformities of the contour of the gallbladder are occasionally confirmed at operation but the roentgenologist is doomed to disappointment if he attempts to diagnose pericholecystic conditions by cholecystography. Gallbladders buried in adhesions will cast shadows with perfectly smooth contours; on the other hand an

irregular contour will appear in an otherwise normal cholecystogram when the gallbladder is found free from adhesions or deformity at operation. Occasionally an hour-glass deformity, incisura, or gross deformity due to adhesions will be confirmed at operation.

At the Mayo Clinic cholecystography has been accurate in cholecystic disease with stones in 98.4 per cent. The invisible gallbladder is the most common and reliable cholecystographic sign, the diagnosis in 95.4 per cent of the cases in this group having been confirmed at operation. Ninety-three per cent of the cases in which a positive diagnosis was made from the cholecystogram were confirmed at operation. On the other hand, only 69 per cent of the cases in which the response was normal were found to be normal at operation. In appraising the accuracy of cholecystography in diagnosis, there must be a standard of what constitutes a diseased gallbladder. A gallbladder which seems to be normal on surgical exploration may prove on microscopic examination to be markedly diseased. A gallbladder containing one or more stones may have normal walls; such a gallbladder usually responds normally to cholecystography, the stones showing as negative shadows. There is a fairly large group of cases in which the gallbladder shows only minor microscopic changes and they respond variably to cholecystography; such cases give definite clinical data pointing to cholecystic disease and a fairly high percentage of patients are relieved after cholecystectomy. It must be remembered that cholecystography is a test of the function of the gallbladder at the time of examination and not a method for de-

picting actual changes due to disease such as is possible in roentgenologic study of the stomach and intestines.

Briefly it may be said that cholecystography, however efficient, should not be expected to bear the entire burden of diagnosis; as in the examination for other diseases, the final opinion should be based on a correlation of all the clinical and laboratory data.

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#### VACCINE TREATMENT FOR INFECTIONS OF UPPER RESPIRATORY TRACT

Upper respiratory infections, acute or chronic, are due to bacterial infection, usually of a mixed type. Various organisms, as the pneumococcus, streptococcus, staphylococcus, influenza bacillus and *Micrococcus catarrhalis*, may be demonstrated as normal inhabitants in the nasopharyngeal secretions of healthy persons. During seasonal variations or epidemics, some particular variety or group may predominate, particularly some type of the pneumococcus or the influenza bacillus. Bacteriologic examination in the upper respiratory infections does not reveal one specific organism as several varieties are present, perhaps some one predominating, depending on circumstances. The

presence or absence of symptoms interpreted as disease depends mainly on the virulence of the infecting organisms present and the resistance of the individual. It is the latter factor that vaccine therapy is supposed to assist. The results of such treatment must be determined by immunity tests or by clinical results. Advocates of vaccine therapy, either autogenous or stock vaccine, are not able to advance laboratory proof that is convincing, but prefer to depend on the clinical data, which are notoriously uncertain. Colds, coryza, upper respiratory infections and the like may respond so promptly to the usual drug therapy or even to no treatment whatever that it is impossible and unfair to make the clinical results a basis of proof for the justification of vaccine therapy. (*Jour. A. M. A.*, November 12, 1927, p. 1713.)

# PRINCIPLES OF SURGERY OF THE GALLBLADDER

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THE dominating condition of the gallbladder requiring surgery is inflammation, be this with or without stones. Especially in the class of cases without stones the proper measuring of the indication for surgical intervention is important. If you compare some very recent editions of continental European text books with the prevalent views in this country you notice a marked difference in the putting of the indications for operation and therefore in the percentage of severe complications found, furthermore in the proportion of malignant disease encountered and of course, as a consequence, in the percentage of operative relief and of mortality.

The old teaching of the symptomless gallstone and that the process of gallstone formation caused no symptoms of itself, and that the disturbances observed were merely due to chronic dyspepsia, kept us for a time from properly sizing up the early symptoms of gallbladder disease. It is true that Langenbuch, who made the first cholecystectomy in 1882, claimed that the bloated feeling, the frequent and disturbing eructations, ill-defined distress and sensitiveness against certain foods were initial symptoms of cholecystitis. But it took many years before these complaints were recognized as strongly pointing to the gallbladder. The indication for operative interference relies in the early stages mostly upon a careful and painstaking history. The little tangible and rather varying symptoms of food distress, bloating and especially distress in the early morning hours grow in their diagnostic importance when they have existed for long years, with or without long intervals. The Cole-Graham *x*-ray examination of the gallbladder became of greatest value in some of the doubtful cases, though the earliest beginning may not produce positive findings.

What are we to do in a case which we have opened in the expectation of finding a cholecystitis and where the gallbladder has a normal appearance, normal color, is perhaps not even tense and is free from adhesions? We look for an enlarged gland at the cystic duct, or for cirrhotic markings of the liver over the gallbladder; they

may be missing. We examine the stomach, the pancreas, the appendix, look for a Meckel's diverticulum, etc. Maybe we find some changes sufficient to explain the symptoms, maybe not. We now have to rely again on the history, which must be very painstaking, and on the *x*-ray findings. This is difficult ground to walk on; here the opinions of surgeons will at times differ. If the history seems really positive, if the symptoms have existed for a long time with or without intervals, it is probably best to take such a gallbladder out, though there was never any definite colicky pain or jaundice. Often you will get a positive culture from the gallbladder wall. The individual experience of the surgeon will be a factor. Perhaps I am on the whole a little too conservative. I feel that on rare occasions I have perhaps taken out a gallbladder unnecessarily, but on the other hand I have been misled several times into leaving a gallbladder in, when it should have come out.

What we have learned of late years is that the cases of cholecystitis without stones and without clear-cut attacks but causing much misery by long continued dyspeptic symptoms, are numerous, can be recognized pretty accurately in most cases by a very exact history and competent roentgen examination and can be relieved of their symptoms in a sufficient number of cases and to a sufficient degree. Of late years the surgeon sees the relative number of operations for stoneless cholecystitis considerably increased. In our last hundred cholecystectomies there were thirty-four without stones.

When the gallbladder is sufficiently incriminated to require surgery, then its excision is the accepted and most satisfactory procedure, unless one has to do with a dilapidated individual where simple drainage of the gallbladder may be preferable. A painstaking examination before operation, observing heart and kidney function and improving it where necessary and feasible, is imperative. Particular attention should be given to proper elimination. The administration of calcium per os in large doses, or preferably intravenously, in prolonged bleeding time is of

greatest value. Far advanced myocardial changes and chronic nephritis are the gravest among the arguments against operation.

When is simple drainage of the gallbladder advisable? In general one can say: when cholecystectomy seems too much of a risk. In old very fat people, in markedly cholemic or septic persons, one does well in making the lesser operation of simple draining. Nevertheless, if the gallbladder is greatly thickened from long standing infection, if abscesses are outside of the gallbladder, one will even in old people often have to take the chance of the excision. Local anesthesia (with or without the addition of some gas or ether) may here be of advantage; but we make it a rule not to use more than four ounces of 0.5 per cent novocain. After the injection of the abdominal walls one has usually used up half of this and we then add, especially in old debilitated people, normal saline solution to reduce the remainder to 0.25 per cent. The parietal peritoneum is injected far to the right from the incision, with the finger in the abdomen controlling the position of the needle point. This allows of free use of retractors. The gallbladder is taken hold of with an instrument or the gauze covered fingers and the area of the cystic duct is injected. Here the solution diffuses readily in the loose tissue and of late we have not always made the deep splanchnic anesthesia between aorta and vena cava, as it did not seem necessary, if we waited a sufficient spell. Thus we removed under local anesthesia the gallbladder of a seventy-three year old lady weighing three hundred and fifty pounds.

Hemorrhage in gallbladder and liver surgery is an important subject. Fortunately by good luck we had no postoperative hemorrhage that required interference in our gallbladder work, which comprises 602 cases. The cystic artery is clamped and tied with ordinary catgut. Dangerous bleeding probably often comes from an untied branch of the cystic artery. It would seem that those who report much trouble from postoperative bleeding from the tied cystic artery made the mistake of draining too widely. If a drainage tube or several such tubes are in direct proximity to the tied vessels, what happens in case of vomiting? The whole intra-abdominal pressure at this moment acts against the lumen or lumina of these tubes. On the other hand, if the abdomen is closed, the relative pressure in

the arteries of the abdomen must be less than normally, because this pressure which worked toward the widely drained wound is now a uniform pressure in the abdomen and works also against the surface of the vessels and their lumina. The general intra-abdominal pressure created by vomiting or straining of any kind has the tendency to force the blood away from the abdominal cavity. The abdominal and thoracic cavities act together in such straining. The blood, arterial and venous, is forced into the extremities and the head. For this reason the face becomes congested. Wherever there is an outlet, the force can act, a hernia will have the tendency to protrude and thus is the condition at the inner opening of rigid drainage tubes. The reason why such marked increase in bile pressure during vomiting was reported in experimental work is undoubtedly that a tube, leading to the outside, was connected with the bile duct. If only collapsible drains are used and the opening for them in the abdominal walls is small, there can be no damage done in the sense of inviting hemorrhage by our drainage.

The cystic duct is tied with a medium sized catgut (twenty-day chromicized is used by us) and then the same thread is thrown around the duct once more. This makes it doubly sure and avoids the possibility of the sutures rolling off. Some surgeons carefully cover the stump with peritoneum. The trouble is that the under surface of the peritoneum is loosely meshed tissue, not well fit for walling off. Covering the stump looks neat but is valueless and rather harmful polypragmasia. It is the best means to keep an

NOTE:—If you take a rubber bulb filled with water and insert through an appropriate opening a rubber tube into its depth, the water will squirt out of the tube when the bulb is compressed. If, instead of the catheter, you use a collapsible soft rubber tube like a Penrose drain, pressure on the bulb will not bring forth any water from the depth because the tube collapses. What water escapes comes from the direct vicinity of the opening. In the case of a soft collapsible abdominal drain with a small corresponding opening in the sutured wound this would mean the escape of what little fluid is near the surface opening; then the neighboring soft parts press toward the wound around the drain, and the depth of the abdominal cavity is under the same physical condition as if the abdomen were closed tightly.

Imagine now that in the bottom or side of our bulb we have a smaller tube enter like a blood vessel and that this tube is tied off just strongly enough to keep it closed against a water pressure from some fountain syringe. If we have a collapsible outlet tube, compression of the bulb will tend to empty backward what fluid was in this artificial artery. In other words vomiting will not invite bleeding from the depth at all. For tied off blood vessels and bile ducts, the only possibility of an unfavorable influence of suddenly increased intra-abdominal pressure would be, apart from a jarring, a sudden change in the shape of the liver, which might become expressed like a sponge; but this does not occur.

Now put the opening of a rigid outlet tube against the smaller tube representing the cystic artery or a bile duct; the counterpressure against the artery opening is removed, and the dangerous difference between atmospheric and peribulbar, that is, intra-abdominal, pressure is brought down to the depth of the tube and acts upon artery and bile ducts.

exudate around the cystic stump in place so that it may cause thickening around, and stricture of, the common duct. As to closure of the sulcus in the liver it is of little importance except in case of oozing of blood. If there should occur a trace of oozing of bile from the raw surface, it is much better that the peritoneum take hold of it at once, especially if the abdomen is closed tightly. The peritoneum is rather lenient towards uninfected bile in minute quantities.

Recently we have been warned not to close the abdomen without some drainage after cholecystectomy. The mishap of bile leakage can of course occur and it is valuable to hear of such incidents, even if they happen rarely. Early recognition of the state of affairs is the only means to save such patients. We have not observed a leakage of bile in any of our undrained cases, but I must admit that I nearly sweat blood when, after closing for the first time a cholecystectomy case tightly, he developed a faint icteric tint on about the sixth day. Nothing further happened and the patient has stayed well now for about seven years. To get an idea of the proportion of our drained and undrained cholecystectomies, the cases operated upon since January 1, 1922, were looked up. There were 218 in all. Of these, seventy-six were drained and 142 were closed tight. In other words, two out of three were closed tightly. Naturally the complicated or seriously infected cases were among the drained ones.

To see what kind of conditions were represented in these two groups, we analyzed the cholecystectomies operated upon since January 1, 1926, and found that

*The abdomen was closed tight without drainage after cholecystectomy in*

	Cases
Cholecystitis without stones.....	32
Gallstone cases (simple).....	23
Gallstones with acute inflammation.....	8
	—
	63

*Drainage after cholecystectomy was instituted in*

	Cases
Cholecystitis without stones.....	2
Gallstone cases (simple).....	13
Gallstones with acute cholecystitis or empyema of gallbladder.....	8
Gallstones and pericholecystitic abscess..	2

Common duct stones..... 3

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28

In one undrained and one drained case a duodenal ulcer was excised and the pyloric sphincter resected at the same session.

As there was no death from leakage of bile in any of our cases, the danger hardly seems great enough to warrant drainage of all cases on account of a possibility which has not occurred so far in approximately 150 undrained cholecystectomies. When there is much difficulty in getting a stone out of the cystic duct, or if there is soiling with infected bile, one surely feels safer with a drain in that wound. To close tight after an operation on the common duct is taking unnecessary chances, inasmuch as a soft collapsible rubber drain does not complicate the wound healing to any extent and adds much to the safety in a doubtful case. We surely do not want to give the impression of being very partial toward closing the abdomen tightly, or of depreciating drainage.

In acute attacks the temperature of the second and third day will inform us whether a simple colic from obstruction of the cystic duct or a cholecystitis of more outspokenly infectious character is before us. If the patient is ready, one can operate most any time after a colic. If the temperature does not come down rather promptly after an attack and if the pain hangs on markedly, then we have either a severely impacted stone with acute inflammatory edema or a more virulent cholecystitis, perhaps even without stones. The leukocyte count will give us the information of the course if examined day by day or even at more frequent intervals. At times a very acute case is sent to the hospital. If the condition does not have the definite earmarks of an acutely perforating case, we delay a couple of hours with our decision. If the pulse and other symptoms then have improved slightly under rest in the hospital, we keep the patient well watched. If the next morning the pain is just as severe, the leukocyte count and the temperature high, we operate. If there is however a tendency to moderation of the symptoms it is better to wait as long as the signs of acute infection show a diminution in severity. The condition may cool off in the course of a week or two and one can then operate with the probability of being able to make a cholecystectomy.

Quite frequently the pancreas is swollen; there is a pancreatitis especially of the head. The close connection of the lymphatics is the reason for this. If there is no fat necrosis in the neighborhood and if the gallbladder disease is in the foreground, the mere swelling of the pancreas head has not very great significance, especially if it is of the lumpy type, *i.e.*, if discrete thickenings, often of the size of marbles, are felt. If the gallbladder is left in, the case will in all probability not be permanently benefited. The gallbladder is therefore best removed and the cystic duct tied. Establishing drainage of the bile has no value, as the pancreatic swelling is in such cases not due to reflux of bile and the bile has free outlet into the gut.

The subject assigned to me was the surgery of the gallbladder only. The primary affections of the deeper ducts are not within the scope of this paper. But I must mention that with the great increase of gallbladder surgery the problem of the sequelæ after operation has loomed up not only as a very important but at the same time as one of the most difficult chapters in abdominal surgery. When much inflammatory thickening exists from stones in the gallbladder, the cystic duct is often greatly shortened and in the presence of a large stone in the neck of the gallbladder it may be quite insignificant. The thickening of the neck of the gallbladder and of the cystic duct may have partly incorporated the hepatic duct into the mass and it can then easily be damaged.

While the routine procedure of removing the gallbladder from the cystic duct outward is the neatest, it is best to start the removal of the gallbladder from without inwards, in any case which does not have a clearly recognizable anatomy. This will greatly help in avoiding injury to the deep ducts. Often even then we do not know how near we are to the common duct. One can get help by splitting the gallbladder on the under surface down toward the duct, or if it is bulky

and unopened one may find it advantageous to clamp it near the infundibulum and cut it away. Then the clamp is loosened after additional protection with gauze, and the proximity of the duct is ascertained. After the exploration of the deeper ducts the necessary trimming away of the gallbladder neck can then be done under better conditions.

Acute perforation of the gallbladder may occur in severe inflammation or from an injury, which is, however, rarely observed. In an injury, as for instance a stab wound, early recognition is the important point. The peritoneum is only moderately damaged by uninfected bile and such extravasation does not need extensive drainage; in fact, in a very fresh injury no draining appears needed. The gallbladder is removed or, if the perforation is small, may be sewed up.

If in a case of acute cholecystitis we find bile in the free abdominal cavity, it is due to one of two conditions. There may be a slough in the gallbladder wall and a readily recognizable hole. The worst destructions of this kind have been, in my experience, in coli infections. While in appendicitis perforation is such a common occurrence, in cholecystitis it is a rather rare finding. This difference is due to several factors, among others the arrangement of the blood supply. In cholecystitis the tendency is more toward severe edematous swelling of the peritoneal surface perhaps with some area of necrosis on the mucosa side. There occurs on the other hand in acute cholecystitis a perforation or, if you prefer, a permeation of bile without any recognizable opening. It is probable that it is due at times to rupture of some of Luschka's crypts which happen in some cases to reach far out toward the peritoneum. This form of bile peritonitis is less vicious than the frank perforation.

The operation of cholecystectomy should not be undertaken light-heartedly. It is considerably more serious than an appendectomy. I am prompted to make this remark by a recent sad experience. A non-calculous case with an outspoken gallbladder history died suddenly from pulmonary embolus. Appendix and gallbladder, both pathologic, had been removed. There was no untoward sign; the patient was up in a chair on the sixth day. On the tenth day sudden death came from embolism. This death came after a long stretch of ninety gallbladder opera-

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NOTE.—Reports of accidental excision of parts of the main bile channels have become rather frequent in the literature. To get into this kind of trouble is considerably easier than to get safely out of it. Where direct repair is possible, splinting with a rubber tube, leading into the duodenum, gives perhaps the most satisfactory results. However, little is known of the late results. Judd, who has undoubtedly the largest experience of any at his command, writes that even two to four years after operations for injuries to the main bile channels strictures may occur. One such accident, excision of the hepatic duct, we reported in the *Twin Cities* number of the *Surgical Clinic of North America* four years ago. Recently this patient, who is now seventy-five years old, wrote us that she is well and has no discomfort. The operation was on Oct. 13, 1921, and therefore dates back five years and eleven months.

tions with only one death, this one also from pulmonary embolism. When Waltman Walters published some months ago his remarkable results in averting postoperative embolism by the internal administration of two grains of thyroid three times a day, we prescribed this medication as a standing order for all our gallbladder cases. The case reported above had had this treatment. Pulmonary embolism is much dreaded in gallbladder surgery.

Among the 302 cholecystectomies since Jan. 1, 1920, there were eleven deaths; three from pulmonary embolism, one from ileo-femoral embolism, two from septic liver shock in peracute infections, one from influenza during the epidemic, one from angina pectoris three weeks after operation, one from gradual exhaustion in carcinoma of the common duct with stones in the gallbladder and common duct, one from myocarditis and old age, and finally one from coli bacteriemia in a diabetic lady, seventy-seven years

old, with calculous cholecystitis and large pericholecystitic abscess.

There remains to be mentioned the carcinoma of the gallbladder. When seen early, carcinoma is usually an accidental finding. The cases of fundus carcinoma, when not too far advanced, are operable. We have twice operated in rather advanced cases; making extensive resections into the liver. In one instance pelvic metastases later developed, and in the other, where, on account of a cholecystostomy many years previously, the gallbladder was adherent to the abdominal walls, local recurrence was noticed after one year. In both cases a long standing infection of the gallbladder *with stones* had apparently been the inciting cause. In carcinoma of the gallbladder, as it appears from the literature, gallstones were found in almost every instance—another strong argument against the so-called harmless gallstone, which term ought to have only historical interest.

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# ACUTE SILENT INFECTION OF THE MAXILLARY SINUS IN RELATION TO ACUTE SYSTEMIC DISEASES\*

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THE occasion of this report from a medical service was the observation of a series of cases of empyema of the maxillary sinus without local pain, in which remote systemic disease was a prominent source of symptoms. Not only did the findings of empyema of the maxillary sinus often cause surprise, but it re-emphasized interest in the relationship of acute sinus infection to acute as well as chronic systemic disease. While focal infection is often thought to be the basis for the production of chronic systemic disease such as glomerulonephritis, arthritis, or bronchitis, the mode or time of infection often remains obscure or defies demonstration.

That acute empyema of the maxillary sinus may be silent as to pain has been emphasized repeatedly. As an instance, Burnap<sup>1</sup> stated that a very small percentage of antral infections is diagnosed early and that part or all of the clinical symptoms may be absent. Particularly in children has the prevalence of unexpected paranasal sinus infection been emphasized by Huenekens<sup>2</sup>; recently Cone<sup>3</sup> at Iowa University reported a high percentage of paranasal sinus disease, the successful treatment of which alleviated various systemic diseases. Marriott<sup>4</sup> and Clausen<sup>5</sup> have emphasized empyema of the maxillary sinus as causative of parenchymatous nephritis in children. Pritchard<sup>6</sup> has emphasized the relationship between upper and lower respiratory tract disease.

While it is recognized that acute antrum infection may be unassociated with localizing symptoms, particularly in children, clinical experience has led us in the past to expect local pain; it is thus expressed in a recent symposium discussion in the *International Medical Digest*, "As a general rule acute inflammation of a sinus is characterized by neuralgic pain in the affected cavity."

It is to call attention to the variation from such a general rule that the following series is reported with emphasis upon the relationship to

acute and chronic systemic disease, and to speculate upon the sequelæ of neglected empyema of the maxillary sinuses. No attempt is made to discuss the special features of diagnosis or treatment which were carried on properly under the supervision of the nose and throat service.†

## CLINICAL DATA

The cases were all adult students, aged 17 to 25 years, and represent only a small percentage of the total number under observation for treatment of respiratory tract infection. The series represents about one-third of the total number diagnosed and treated for empyema of the maxillary sinus. In all, forty-six cases were reported to have maxillary sinusitis and were treated on the nose and throat service. Those cases in which a diagnosis of acute antral infection was made but in which irrigation was not done are not included in the report. With one exception all occurred during the current school year. In all cases reported, pus was irrigated from the antrum.

It is seen that the usual symptoms were headache, malaise, nasal discharge, and cough, more often than not of a few days duration, which symptoms had a tendency to hang on longer than the usual head cold. The headache was neither localized nor extremely severe, rather similar to that often seen with any type of acute infection. Most often the history of the infection suggested rhinitis followed by empyema of the antrum. However, at least one case suggested primary invasion of the antrum. Fever to 100° was present and recorded in three cases; leukocytosis was inconstant. Bacteriological examination was not attempted. Special examination of the nasal sinuses by transillumination and x-ray was requested at first more as an elimination procedure where the fever was higher or duration of rhinitis or cough seemed longer than usual. The finding of empyema of the antrum was sometimes a surprise but only emphasized the fact

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†Thanks are due to Drs. George McGeary and Walter Fink for their cooperation and permission to review their records.

Case	Age and Sex	Symptoms		Physical Examination	Antra		Laboratory		Complications or associated disease
		Description	Duration		X-ray	Irrigations	Urinalysis	Leukocytes	
1. L.H.	20 M	Headache Chills Fever Cough	Six days	T - 100° P 80 Pharynx reddened Chest essentially negative Occasional sibilant rales.	Cloudiness bilateral	Both 3	Trace albumin once	7500	0
2. E.D.	21 M.	Headache Chills Backache	Three days	Pharynx reddened Occasional mucous rales	Cloudiness bilateral	Both 1 left 4 right	0	7900	Bronchitis
3. H.B.	21 M	Weakness Sore throat Hoarseness Head cold Cough	One week	Pharynx reddened Cervical glands enlarged Few rales over bronchi	Cloudiness frontal sinuses and left antrum	3	0		Bronchitis
4. C.D.	23 M	Cough and wheezy respiration History of asthmatic attacks	One week	T 99° to 101° P 100 Injection of nasopharynx Sibilant rales	Cloudiness bilateral	Both 5	0	7100	Aggravation of symptoms of asthmatic bronchitis
5. L.M.	17 F	Weakness Cough	Six days	Numerous medium rales at right base	Cloudiness left antrum Bronchiectasis right base (chest)	Left 1	0		Possibly pulmonary signs secondary to antrum. Three months later chest clear
6. J.E.	23 M	Headache Malaise Head cold	Two weeks	T - 100° Rales over bronchi	Cloudiness right	Right 2	0	12 200	Acute bronchitis
7. A.S.	20 M	Headache Chills, fever Malaise Slight cough Nasal secretion	Two days	Pharynx reddened Rales sibilant	Cloudiness bilateral	10 right	0	8500 11200	Acute bronchitis
8. H.W.	23 M	Slight headache Swollen ankles Head cold	Two weeks	Slight edema of ankles Blood pressure 144/88	Cloudiness left	Both 3	1018, alb. 2+ Sugar - Hyaline & granular casts White & red blood cells P.S.P. and blood metabolites normal		Diffuse glomerulonephritis
9. B.S.	24 M	Headache Slight cough	One day	Slight injection of throat Cervical adenopathy	Cloudiness right	10 right	Trace albumin once	7500	0
10. R.H.	25 M	Malaise Headache Chills Cough	One week	Slight injection of nasopharynx	Cloudiness bilateral	Both 3	0	6500	0
11. H.M.	M	Head cold	Five days	Injection of nasopharynx	Cloudiness bilateral	Both 6	-	-	0
12. S.P.	M	Discharge from nostril		Injection and secretion	Cloudiness right	3 right	-	-	0
13. E.W.	F	Cough Moderate nasal secretion	One month	Injection of nasopharynx	Cloudiness bilateral	Both 1	-	-	0
14. R.L.	M	Head cold Slight cough	Thirteen days	Injection of nasopharynx	Cloudiness right	1 right	-	-	0
15. H.J.	M	Head cold	Ten days	Injection of nasopharynx Purulent secretion	Cloudiness right	4 right	-	-	0

Fig. 1. Chief clinical data on fifteen cases of acute empyema of the maxillary sinus.

that the examination of the patient with acute respiratory tract disease is incomplete without examination of the accessory sinuses for pus accumulation.

Associated bronchitis was considered present in those patients with cough and with râles heard over the bronchi; cough was present in practically all. In one patient localized signs at the right base indicated bronchopneumonia. In this instance, considering the history and the minimal degree of sinus infection it is thought impossible definitely to relate the two processes. Three months later these pulmonary signs had essentially disappeared.

Special attention has not been given to cervical adenopathy in this study, but attention should be called to the fact that, according to Most,<sup>7</sup> the lymphatic drainage of the nasal sinuses is through the retropharyngeal glands to the deep cervical nodes underlying the sternomastoid muscle.

#### DISCUSSION

Most interesting is the history of patient H. B. who appeared with slight headache and swelling of the ankles and in whom a head cold had existed for two weeks. Complete examination revealed a very definite empyema of the antrum and evidence of acute diffuse glomerulonephritis including edema, slight hypertension, albumin, and casts and red blood cells in the urinary sediment. Following irrigation of the right maxillary sinus extending over a period of three weeks, the urinary findings and edema subsided; one year later the patient's physical examination was normal.

The occurrence of bronchitis and nephritis following acute concealed maxillary sinus infection illustrates one possible mode of onset of chronic disease. If, in the acute process, there exists at times this definite sequence of acute systemic disease, its subsequent chronicity may start in the neglected acute focus. Certainly the chronic localized process or focus has had its antecedent acute stage and clinical observation suggests that the chronic systemic disease follows the continuous infection from such a focus. The occurrence of a protracted head cold due to a silent infection readily escapes the patient's memory and, becoming chronic, causes little if any additional signs. The empyema may have a tendency to heal and leave no trace of its sig-

nificance in the production of remote chronic disease. In all cases of acute maxillary sinusitis here described, remote effects have been the outstanding source of symptoms, if bronchitis is to be considered remote.

No attempt is made to speak in terms of absolute proof that the acute maxillary sinus infection here described has caused the acute systemic disease. Attention is called to the sequence of events from history and examination. Such sequence suggests a causal relationship and forms the logical basis for successful treatment.

New respect is attached to the so-called rhinitis that does not readily clear up; the routine medical examination should be detailed enough to rule out cloudiness of the antra. Increased coöperation becomes essential between internist and head specialist as well as a deeper appreciation of the fact that pathology often does not confine itself to one single region and that the human body must be viewed in its entirety.

#### SUMMARY

1. In a total series of forty-six cases with empyema of the maxillary sinus, local pain was lacking in 15.
2. In seven cases, there was associated acute systemic disease, including bronchitis 5, bronchopneumonia 1, and acute glomerulonephritis 1.
3. Oversight of acute empyema of the maxillary sinus represents one possible source from which acute systemic disease may become chronic through neglect in treatment.
4. Special examination of the nasal accessory sinuses should be made in all patients with acute respiratory tract or systemic infection of doubtful or unknown origin.

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# A CONSIDERATION OF CERTAIN ASPECTS OF VERTIGO FROM AN OPHTHALMOLOGICAL STANDPOINT\*

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A PERSON of middle age has come to you for the alleviation of his condition. His story, no doubt, is a familiar one. "Doctor, I have been well practically my whole life. Of course I have been treated for minor illnesses, but now of late I have felt dizzy. At times I feel nauseated; at times feel faint; and occasionally if I do not grasp a stationary object, I feel as if I might fall. Again there may be an intermittent period of time when I feel fairly well. These attacks usually come on suddenly, apparently without cause and are aggravated by sudden movements of my body and by fatigue. They are lessened if I lie down and am quiet. I can do my work fairly well, but recently these attacks have been getting worse, which naturally decreases my efficiency, both mentally and physically. I have been given much advice and a variety of medications, and the fact that I am here renders clear the answer to their efficiency." Our patient represents a relatively common type seen from time to time in the practice of medical science. There has been a tendency to regard this type with vague indefinite sensations of dizziness as a definite newly acquired disease in the incipient stage. The general physical examination with detailed neurological and laboratory examinations has usually failed to disclose evidence of serious disease. The treatment has mainly been that of prophylactic measures.

Vertigo, then, is a symptom, a manifestation of some underlying and often obscure condition. The word, vertigo, is a derivative of the Latin, "vertere," meaning to turn. The definition might be stated as "any movement or sense of movement, either in the individual himself or in external objects, that involves a real or seeming defect in the equilibrium of the body, and is associated with more or less disturbance of consciousness." The etiology of this symptom, popularly known as dizziness, depends upon a disturbance of the sense of equilibrium. The co-ordinated action of various groups of muscles maintains this equilibrium of the body, and the

mechanism of nervous control for this action is situated in the cerebellum. The sensory or afferent impulses are transmitted to the cerebellar centers from the eyes, semicircular canals, muscles, joints, skin, or any other part of the body that may come in contact with external objects. Due to the cerebellar connections with motor centers of the cerebral hemispheres, these sensory impressions determine the amount of motor impulses necessary to cause muscular contraction insuring the state of perfect balance or equilibrium. The manifestation of vertigo, then, would occur if there was a disturbance in the transmission or reception of these motor impulses going to the cerebellum. The correct interpretation can only be arrived at by considering all the possibilities in a thorough systematic manner, and the relationship of other symptoms and clinical findings.

The oculist and aurist often encounter the symptom of vertigo. A vastly increasing number of people are learning to associate it with disorders of these complex organs of the special senses. As the number of referred cases decreases with the higher education of the masses who select their own specialist, the danger of overlooking the essential etiology increases and the inter-relationship of ophthalmology, otolaryngology, and internal medicine becomes more and more important. Situated as I am in a group representing the various phases of medical practice, this inter-relationship was the factor that determined my observations of certain aspects of vertigo from an ophthalmological standpoint.

A survey of 6,000 cases from our records was made from the standpoint of the patients' symptoms, the basis for seeking relief. In classifying these symptoms, we did not include those elicited on questioning, but only those volunteered by the patients as their chief complaint. The vertiginous condition, we found, was the basis for seeking medical aid in approximately 2 per cent of these 6,000 cases. We then carried our studies further from another viewpoint. Of these 6,000

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cases, 1,600 refractions were performed. An analysis of the cases refracted revealed two general observations: (1) about 30 per cent of the refractions were recommended upon the findings of the routine physical examination, thus including the class who thought their eyes were normal; (2) the remaining 70 per cent came directly to the ophthalmologist for relief of symptoms referable to the eyes. A study was made of these 1,600 refractions and the symptoms for the relief of which these patients were refracted were classified. The symptoms are familiar as those generally associated with disturbance of the refractive media of the eye, *i.e.*, headache, blurred vision, epiphora, asthenopia, presbyopic changes, difficulty in distant vision, vertigo, blepharitis marginalis, strabismus, and correction of aphakia produced by cataract extraction. In classifying these symptoms as to their predominance, we counted the total number of times each was presented either as the only symptom for relief, or in combination with the other symptoms. This resulted in the following table:

<i>Complaint</i>	<i>Percentage</i>
Headache .....	33
Blurred Vision .....	32
Epiphora .....	3
Asthenopia .....	30
Presbyopic Changes .....	24
Difficulty in Distant Vision.....	8
Blepharitis Marginalis .....	1.6
Strabismus .....	2
Correction of aphakia .....	0.3
Vertigo .....	4.4

From this summary, headache, blurred vision, asthenopia, and presbyopic changes are outstanding symptoms, in contrast to the low percentage of vertigo (4.4 per cent of the 1,600 cases).

Vertigo has been presented as a general condition the internist is often called upon to treat. In our series, 2 per cent claimed this as their chief symptom. Textbooks and the literature tell us that vertigo is another widespread symptom for the relief of which the patient often visits the ophthalmologist. Thus both the internist and oculist are called upon to determine whether the vertiginous condition is caused by a general condition, or can be attributed to disturbance of the special senses. Some 4.4 per cent of all the cases refracted coming under the observation of our institution, were treated by

the ophthalmologist for their vertiginous condition. Two per cent of these patients complaining of vertigo came to the oculist directly on their own self-made diagnosis, while the remaining 2.4 per cent came to the internist for relief. The 2 per cent who came directly did not have true vertigo, but complained of transient attacks of "dizziness" which we found were due usually to hypermetropia or a transient diplopia due to weakness of convergence. The vertigo of the remaining 2.4 per cent was of a different type. The people had selected the internist for relief (1) because of the severity and persistency of their symptoms; (2) repeated non-successful treatments from other internists; (3) they felt their special senses could not be the cause. The final analysis as the result of thorough physical examination from every standpoint revealed that these people were suffering from a visual disorder causing their vertigo. Thus the importance of this class of patients consisting of 2.4 per cent of 1,600 refractions was evident.

An analysis of this class led to the following observations:

1. Vertigo was their only major complaint, designated usually as an indefinite sensation of dizziness without any rotary or tumbling character, and as either constant or vague in occurrence.

2. All these patients believed their eyes were normal, and it was difficult at times to impress them with the fact that their refractive apparatus was the defective and causative factor.

3. The symptoms varied from: (a) Vomiting spells with vertigo, especially on moving the head quickly, followed by faintness; (b) tendency to fall, which is persistent; (c) inability to concentrate and balance when walking; (d) dizziness in bending over, especially if fatigued; and (e) constant dizziness, increasing the last few years.

4. The duration of the vertigo varied from two weeks to six years.

5. Practically every walk of life was included in the list.

6. The age period between 30 and 40 predominated.

7. The ratio was fairly evenly divided between sexes.

8. The patients had all been recommended treatment of the same type in the past: (a) rest in bed with temporary relief always; (b) free

purgation with various medicinal agents; (c) tonics of every variety; (d) the usual recommendation for individuals with neurotic and unstable personalities; (e) removal of foci of infection.

9. With only few exceptions, all the patients were robust, healthy individuals whose pride in their well-being had been injured by the presence of this disturbing symptom.

10. The cause was found to be a refractive error, usually of small denomination, and astigmatic. The ear, nose and throat examination in all cases was negative.

11. The final cure of this class consisted of the correct prescribing and fitting of glasses.

In order to treat successfully any condition, the knowledge of the underlying pathology is fundamental. Symptoms referable to the eye present themselves in valuable and interesting forms in many general affections. Great stress has been placed by some upon a condition of heterophoria. Our study has revealed that errors of refraction and accommodation are of much greater importance. The clinical facts established in our study of these vertiginous cases were interesting and illuminating. The subjective test with the Snellen letters revealed in practically all cases 6/6 or 20/20 vision; the natural balance of the ocular muscles was within normal limits; and the range of accommodation was normal in respect to the various ages of the patients. The ophthalmoscopic examination in all cases was essentially negative. The main objective finding in all cases was a hyperopic astigmatism as found by the retinoscopic examination. The characteristics of this finding were:

1. The amount present varied from  $+0.25$  to  $+1.00$  diopters, the most prevalent defect being between  $+0.25$  and  $+0.50$ .

2. The amount present was usually the same in both eyes.

3. Most important as to the causation of the symptom was the fact that the axis of the astigmatism was (a) usually in the oblique meridians, (b) usually astigmatism against the rule; and (c) a different axis in each eye.

We know that true vertigo depends mainly upon an interference with the afferent impulses from the semicircular canals or from the eyes. Our only positive finding in these cases was this hyperopic astigmatism of varying degrees and axes. The causation of vertigo in this class of

people must have been these astigmatic errors, for the prescription and fitting of proper glasses relieved the condition.

The actual mechanism of vertigo from this source is speculative. Under normal conditions, an image of an object viewed is impressed on each retina. This is performed by the complex mechanisms of the accommodative and refractive agencies. Binocular single vision implies the union into one single conscious impression of the two separate images. This fusion is analogous to the perception of sound. We do not wonder why we do not hear double because a sound is perceived separately by each ear. Naturally, in order that the fusion of visual images be physiologically perfect, the two images from each eye must be identical, as brought forth by the theory of identical points. Any variance from this standard would call forth upon that particular eye added effort to make the image perfect. If that were not possible, the fusion center would attempt to correct the dissimilarity, or entirely disregard the less perfect image and accept the other, as for example in many cases of anisometropia and antimetropia. Thus when images of two unlike objects are thrown simultaneously one on each retina, the mind is presented with two different sensations, and we then have what is called the struggle of the visual fields. It is this struggle to promote fusion which may be the underlying basis for the causation of this type of vertigo. We know that if vertical lines are seen by one eye and horizontal lines by the other, there is no genuine fusion into a fixed and constant picture. We will see only one field at the time, alternately; or the field is broken. In our cases we found as a characteristic this astigmatic error usually at a different axis in each eye. The fusion center in this type of case would not disregard one of the images for the vision we found to be subjectively normal, but would try to fuse them. Each individual eye would first try to correct the defect by accommodative effort and thus present a normal image to the fusion center, but in our series of cases all our patients were at or near the age when presbyopic changes take place, with the natural deterioration of accommodative power. Thus this struggle of visual fields would occur in the attempt at fusion of the two images, and this, due to the resultant incompatibility, would give rise to confusion in the eyes. Ocular

impressions correct the false sensations from the muscles in the maintenance of equilibrium, and thus in turn, if our ocular impressions are confused, they would increase the falsity of the afferent or sensory impulses to the cerebellar centers. One can then surmise that this interference would lead to this vertiginous condition.

A follow-up investigation was recently made to determine the efficacy of the treatment instituted. Ninety per cent claimed absolute relief from their distressing symptom, while the remaining 10 per cent reported varying degrees of partial relief. All were benefited.

My purpose is not to present to you the well established fact that vertigo can be caused by

errors of refraction, but to further this view with a consideration from a different viewpoint. According to our statistics the percentage of people who suffer from true vertigo, as compared to those with subjective symptoms referred to the eyes, is small. The significance lies just in that fact. That percentage wants to be recognized. Fifty per cent of our cases refracted suffering from this condition appealed to the internist first for aid. That is a significant fact, and a splendid argument for more inter-relationship between internist and ophthalmologist. The oculist must also recognize this definite syndrome as one that is intimately connected with his field.

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#### SCARLET FEVER ANTITOXIN

The advantages of giving commercial scarlet fever antitoxin are necessarily dependent on the accuracy of standardization of the preparation and its use in adequate dosage. The chief advantage of giving commercial scarlet fever antitoxin as a preventive is that the administration of 100,000 neutralizing units prevents the development of clinical scarlet fever in a susceptible person already infected with scarlet fever streptococci but not yet sick. This protection is transient, and, as soon as the antitoxin is eliminated from the body, the individual may again become susceptible to scarlet fever and should be more permanently protected by active immunization with graduated doses of the toxin. The advantages of giving scarlet fever antitoxin are: 1. If an adequate dose is given, the toxin in the patient's body is neutralized and death from toxemia is prevented. 2. If the antitoxin is given early, both the incidence and the severity of complications are reduced. 3. As a rule, patients who receive scarlet fever antitoxin early in the disease get rid of the scarlet fever streptococci

sooner than those who do not receive the antitoxin. (Jour. A. M. A., November 5, 1927, p. 1625.)

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#### THE MEDICAL PROFESSION AND COSMETICS

The American Druggist, which, according to newspaper reports, has been added to the series of publications owned and controlled by the International Publications, Inc., of which William Randolph Hearst is president, contains an article by one Alice (Hyphen) Esther Garvin, who apparently has developed the quaint notion that the American Medical Association is endeavoring to secure legislation which will make it necessary for druggists to sell cosmetic preparations only on prescription. This extravagant straw man the lady then devastates with ridicule. The American Medical Association is holding strictly to its policy of protection of the public in all matters related to health, asking only that the presence of dangerous ingredients in the few cosmetic preparations that contain them be so indicated as to give the public the opportunity of knowing what risks it may run in using them. (Jour. A. M. A., November 19, 1927, p. 1787.)

# HOSPITAL OBSTETRICAL RECORDS OVER A SIX YEAR PERIOD

GERALD P. DUNNE, M.D., C. M. (McGILL)  
*Saint Paul*

AN analysis is presented of 1,992 consecutive private and dispensary patients delivered by the obstetrical staff of The Charles T. Miller Hospital, Saint Paul, during the period December 20, 1920, to December 31, 1926.

The average hospitalization was eleven days.

Nearly all the dispensary patients were primiparæ who had received prenatal care at The Amherst H. Wilder Dispensary. They were delivered by internes under supervision of the associates of the department head.

Eighty-seven per cent of the labors were attended by men limiting themselves to obstetrics and gynecology; 13 per cent by general practitioners.

TABLE I-A  
LABORS

	Births	Fetal Deaths	Maternal Deaths
Spont. ....	1344	1359	50—3.6%
Oper. ....	648	663	34—5 %
Totals ....	1992	2022	84—4.1%
67 Stillbirths			
17 Postpartum (fetal) deaths (12 days)			
84 Total Fetal Deaths.....			4.1%

TABLE I-B  
LABORS

% Operative term cases 608 to total term cases 1852 .....	32.1%
% Operative premature cases 46 to total premature cases 140.....	32.8%
% Total operative cases 654 to total cases 1992....	38.8%

TABLE II  
SPONTANEOUS LABORS

	Births	Fetal Deaths	Maternal Deaths
Term: Primip. ....	454	5	0
Multip. ....	788	10	0
Prem.: Primip. ....	51	10	0
Multip. ....	36	87	23
Multiple Preg. (twins) .....	15	30	2
Totals .....	1344	1359	50
50 Fetal Deaths—3% (59½% of total F. D.)			1

TABLE III  
OPERATIVE LABORS

	Births	Fetal Deaths	Maternal Deaths
Term: Primip. ....	418	10	0
Multip. ....	176	5	3
Prem.: Primip. ....	20	6	0
Multip. ....	19	3	0
Multiple Preg. (twins) .....	15	30	10
Totals .....	648	663	34
34 Fetal Deaths—5.1% (40½% of total F. D.)			3

TABLE IV  
ABORTIONS

	Trimesters		
	First	Second	
Complete .....	20	21	27.3%
Incomplete .....	87	12	66.1%
Therapeutic .....	7	3	6.6%
Totals .....	114	36	
Maternal Mortality.....		1	0.06%
(Pelvic Abscess and Tbc. Peritonitis)			
% Operative to total Abortions.....			72.6 %
1 (abortion); 13.3 (deliveries)			

TABLE V  
PRESENTATIONS AND POSITIONS

Positions recorded.....					1941
Not recorded.....					81
Total .....					2022
<i>Vertex:</i> .....	1867	96 %	<i>Breech:</i> .....	68	3.5%
L O A.....	1309	70 %	Full .....	38	55 %
R O A.....	308	16 %	Frank .....	20	29 %
R O P.....	220	11 %	Footling .....	10	14 %
L O P.....	12	.6%			
Brow .....	15	.7%			
Face .....	3	.1%	<i>Transverse:</i> ....	6	.5%

TABLE VI  
OPERATIVE DELIVERY METHODS

Total.....	648	Methods used.....	699
<i>Methods:</i> .....		<i>Fetal Mortality:</i>	
Cesarean .....	60	3	5 %
Forceps .....	502	10	1.9%
Breech Extraction .....	61	7	11.4%
Version & Extraction....	20	4	20 %
Inductions .....	54	8	14.8%
Craniotomy .....	2	2	100 %

TABLE VII  
FORCEPS

		Fetal Deaths	Maternal Deaths
<i>Primipara:</i>			
High: Tarnier .....	16		
Keilland .....	40	56	5
Mid .....		89	1
Low .....		238	1
<i>Multipara:</i>			
High: Tarnier .....	10		
Keilland .....	34	44	1
Mid .....		13	0
Low .....		59	3
TOTALS .....	499	11	1
Fetal Mortality.....			2 %
Maternal Mortality.....			.19%
3° Lacerations (3+)			6.7 %

TABLE VIII  
FORCEPS (INDICATIONS)

Uterine Inertia.....	125	24 %
Posterior Position.....	114	22 %
Forceps Control.....	93	18 %
Contracted Pelvis.....	59	11 %
Fetal Distress.....	50	9 %
Maternal Distress.....	37	7 %
Non-rotation .....	23	4 %
Heart Disease.....	7	1.3%

## FORCEPS (INDICATIONS) (Cont'd)

Aftercoming Head.....	6	1.1%
Brow .....	6	1.1%
Eclampsia .....	5	.9%
Pendulous Abdomen.....	5	.9%
Prominent Ischial Spines.....	5	.9%
Previous Cesarean.....	4	.7%
Following Hysterotomy.....	4	.7%
Prolapse Cord (Vertex).....	3	.5%
First Twin.....	3	.5%
Second Twin.....	1	.1%
Both Twins.....	3	.5%
Diastasis Recti.....	1	.1%
Placenta Previa.....	1	.1%
Ventro-fixation, Uterus.....	1	.1%

TABLE IX  
INDUCTIONS

Total .....	54	
Methods:		
Voorhees' Bag .....	41	
Rupture Membranes.....	5	
Oil, Quinine and Pituitrin.....	7	
Bougies .....	4	
Followed by Cesarean.....	1	
Followed by Version.....	3	
Results:		
Born Alive.....	47	87%
Fetal Mortality:		
Stillborn Premature.....	3	5%
Stillborn Term.....	4	7%
Abortion .....	1	1%

TABLE X  
INDUCTION INDICATIONS

Contracted Pelvis.....	11	20%
Placenta Previa.....	10	18%
Overterm .....	7	12%
Pre-eclampsia .....	7	12%
Nephritis .....	6	11%
Hydramnios .....	4	7%
Large Head.....	3	5%
Occiput Posterior.....	2	3%
Cardiac Disease .....	2	3%
Pyelitis .....	2	3%
Hyperemesis Gravidarum.....	1	1%
Hypertension .....	1	1%
Rigid Cervix.....	1	1%
Tuberculosis .....	1	1%
Premature Rupture, Membranes.....	1	1%

TABLE XI  
CESAREANS

Total .....	60	
Transperitoneal .....	1	
Classical .....	31	
Extraperitoneal .....	27	
Porro .....	1	
Maternal Mortality.....	0	
Fetal Mortality.....	3	5 %
Puerperal Infection.....	4	6.6%
Wound Infection .....	11	18 %
Indications:		
Contracted Pelvis (Anatomic and Relative).....	53	
Toxemia .....	3	
Failure of Forceps.....	3	
Brow .....	1	
Placenta Previa.....	2	

TABLE XII  
VERSION AND EXTRACTION

Total.....	20	Fetal Mortality.....	4	20%
Indications:				
Transverse .....	6			
Multiple Pregnancy.....	5			
Failure of Forceps.....	2			
Placenta Previa .....	2			
Brow .....	2			
Following Induction.....	3			

## TABLE XIII-A

## ANTEPARTUM HEMORRHAGES

Placenta Previa:		
Multipara.....	10	Term..... 8
Primipara.....	8	Premature..... 10
Live Births.....	14	78 %
Fetal Mortality .....	4	22 %
Maternal Mortality .....	1	5.5%
(Postpartum convulsions—48 hours)		
Treatment:		
Spontaneous Deliveries.....		5
Voorhees' Bag .....		6
Forceps .....		3
Version .....		2
Cesarean .....		2

## TABLE XIII-B

## ANTEPARTUM HEMORRHAGES

Abruptio Placentae:		
Multipara.....	2	Term..... 2
Primipara.....	3	Premature..... 3
Live Births.....	2	40%
Fetal Mortality.....	3	60%
Treatment:		
Spontaneous Deliveries.....		2
Voorhees' Bag .....		1
Quinine and Pituitrin.....		2

## TABLE XIV

## POSTPARTUM HEMORRHAGE

Total 22 (1922 deliveries)—1.1%		
Maternal Deaths.....	0	
Maternal Morbidity .....	2	9%
Causes:		
Atony .....	19	63%
Adherent Placenta.....	4	13%
Placenta Previa.....	2	6%
Lacerated Cervix.....	3	10%
Duncan Separation.....	2	6%
Treatment:		
Massage, Ergot and Pituitrin.....	13	
Saline .....	8	
Pack .....	3	
Crede .....	7	
Manual Removal.....	4	
Cervical Repair .....	1	

## TABLE XV

## HYPEREMESIS GRAVIDARUM

Primipara.....	10	Multipara.....	15	TOTAL.....	25
End Results:					
Spontaneous Term.....					10
Premature .....					2
Forceps .....					1
Failed to Return.....					3
Fetal Deaths:					
Abortions .....					3
Hysterotomy .....					3
Miscarriage .....					3
Treatment:					
Therapeutic Abortion.....					3
Abdominal Hysterotomy and Sterilization.....					1
Vaginal Hysterotomy and Curettage.....					2
Glucose and Sedatives.....					23
Whole Blood Injection, Subcutaneous, 30-50 c.c.....					3

## TABLE XVI

## TOXEMIA OF PREGNANCY

Total Labors.....					1992
Fetal Deaths.....					84
Maternal Deaths .....					4
			% to		
			Fetal	Total	Maternal
			Deaths	F. D.	Deaths
Pre-eclampsia					
Primipara .....	6				
Multipara .....	7				
	13—	.65%	2—	2.3%	0
		6.5:1000		15%	

## TOXEMIA OF PREGNANCY

	Fetal Deaths	% to Total F.D.	Maternal Deaths
--	--------------	-----------------	-----------------

Eclampsia			
Primipara .....	4		
Multipara .....	8		
	12—	.65%	8— 9.5% 1†
		6.5:1000	53%*
Nephritic Toxemia			
Primipara .....	29		
Multipara .....	24		
	53—	2.66%	21— 25% 1‡
		26.6:1000	39%
TOTALS .....	78—	3.9%	31— 36.8% 2—50% of total
			39.7%

\*3 Extra Children

†Postpartum 48 hrs., Convulsions, Plac. Previa

‡Cerebral Hemorrhage, undelivered at 6 mos.

TABLE XVII-A

## PUERPERAL INFECTIONS AND MORBIDITY

Total Labors.....	1992	
Total Febrile Cases.....	196	9.8%
Puerperal Septicemia .....	34	1.7%
Puerperal Morbidity .....	96	4.3%
Causes other than Puerperal.....	66	3.8%
Maternal Deaths.....	0	

TABLE XVII-B

## PUERPERAL INFECTIONS AND MORBIDITY

PUERPERAL SEPTICEMIA:		
Spontaneous Deliveries.....	12	
Operative Deliveries .....	17	
Cesarean Sections.....	4	
Induction (Bag) (Placenta Previa).....	1	
	34	1.7%

## NON-PUERPERAL CAUSES:

*Respiratory:*

Otitis Media, unilateral.....	1	
Otitis Media, bilateral.....	2	
Bronchitis .....	10	
Influenza .....	2	
Sinusitis .....	2	
Broncho-pneumonia .....	1	
	18	27 %

*Urinary:*

Pyelitis .....	13	
Cystitis .....	5	
Urethritis .....	1	
Peri-urethral abscess.....	1	
	20	30 %

*Circulatory:*

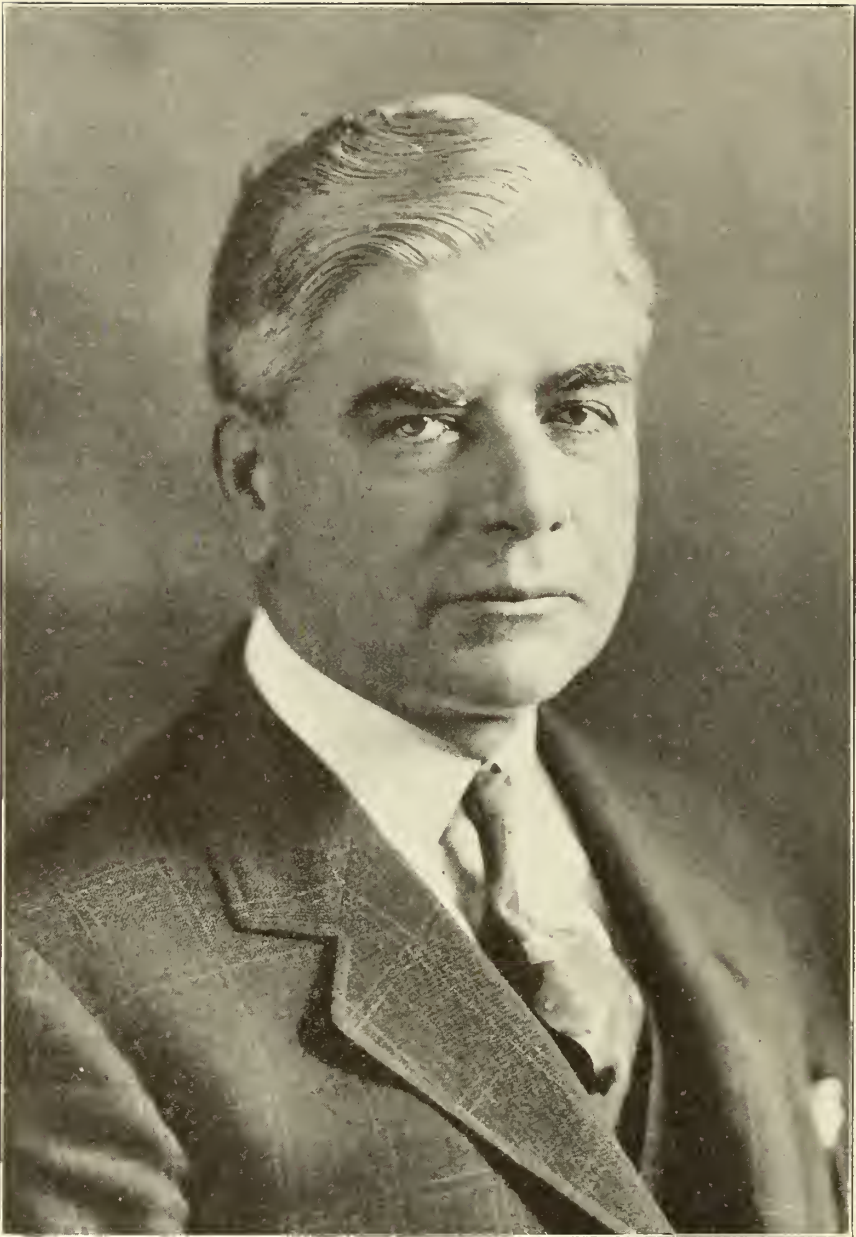
Thrombophlebitis, Antepartum.....	1	
Postpartum .....	14	
	15	23 %

*Mammary:*

Mastitis, non-suppurative.....	13	19 %
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Tabulation of pelves could not be done because of the failure to record pelvic measurements.

No conclusions are drawn, the study being undertaken to add to the fund of obstetrical information and to show that proper training, technic and hospitalization can reduce the maternal and fetal death rates and morbidity.



CHARLES B. WRIGHT, M.D.

*Minneapolis*

President, Minnesota State Medical Association, 1928

# MINNESOTA MEDICINE

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## EDITORIAL

### Milestones

The year which has just come to a close has been a notable one for the State Medical Association. The achievements in the various activities of the Association are well brought out in the presidential address of our retiring president, Dr. W. F. Braasch, which appears in this issue.

The outstanding achievement of the year was the enactment of the Basic Science Act. The test of the pudding is in the eating. Already there is every indication that the purpose of the act is being achieved and that no licenses to practice the healing art are going to be issued to any applicants not well grounded in the fundamental sciences.

Of scarcely less importance was the enactment the past year of the new Medical Practice Act. The new provision under the act for yearly registration of physicians with the Minnesota State Board of Medical Examiners should make easier the detection of non-licensed practitioners. Every effort has been made by the secretary of the Board to obtain the addresses of all licensed physicians practicing in the state. Registration forms have been mailed to all known physicians in the state and these forms should be carefully filled out, special attention being paid to the affidavit to be filled in by the Clerk of the District Court. The registration fee this year and next is to be \$5.00 and thereafter \$2.00 yearly. The income derived will be used in part to employ a medical inspector as provided by law to assist in enforcing the act. Heretofore the Board has been handicapped by lack of funds and more has been expected of the Board than was justified. Numerous complaints regarding illegal practitioners have reached the Board from time to time and often the protesting physician wishes his name omitted. This is natural but if anything worth while is to be accomplished the local county attorney, in whose hands the prosecution lies, must be assisted in obtaining evidence by local physicians. Letting George do it will not accomplish results.

The Committee on Public Health Education of the State Association has been in existence a year. The task of the committee is an enormous one and available finances for the work are meager. The past year has been spent by the Committee in informal discussions of the problem with small groups of members throughout the state in an effort to crystallize the consensus of opinion of the profession. Those interested met in a large group conference in Minneapolis, December 10, and heard the subject discussed from the standpoint of the public press, the radio, the dentist, and the medical profession. Meetings of this sort will undoubtedly bring out the best course for the profession to pursue to accomplish maximum results.

We believe that the most important means of instructing the public is through the advice each physician gives his patients. Few are the families not reached in this way. And too, by their deeds ye shall know them. If every physician gave every patient honest and efficient service there would be little need for further instruction.

There is no doubt but that people are interested in individual and public health and they are getting instruction and a lot of it. Much of it is good and is given directly or indirectly by physicians. Not to mention *Hygeia*, the American Medical Association lay magazine, pick up almost any newspaper or magazine and you are almost sure to find one or more articles on medical matters. Unfortunately a great proportion of so-called health information is distinctly vicious. We are impressed of late with the seemingly greater number of obviously fake medical advertisements appearing in local newspapers, which are published undoubtedly for revenue only. It is unfortunate that more newspapers do not see the light and sacrifice a little income for the public good. Here is a place where the organized profession might accomplish something very tangible.

There have recently appeared signs of increasing interest in the university extension work carried on in coöperation with the Committee on Hospitals and Medical Education under the leadership of Dr. N. O. Pearce. The course on Physiology which is receiving such enthusiastic support from Duluth practitioners at present promises to receive the same support in the near future from physicians in the Twin Cities. It seems as though the conscientious efforts of the committee in the past are about to bear fruit in abundance.

We bid farewell to the administration of last year and greet the new administration, at the same time pledging our utmost support to the new president of the State Association, Dr. C. B. Wright of Minneapolis.

---

### Cigarette Advertising

Not so long ago free and generous samples of cigarettes were sent to physicians all over the country with requests for testimonials as to the superiority of the particular brand over all others. We know of no one who returned the testimonial but doubtless some did, yielding to the power of suggestion and being very obliging. The scant return of testimonials, however, did not deter the said cigarette manufacturer from at least giving the impression that some 140,000 physicians of this country recognize the superiority from a health standpoint of this certain brand of cigarettes. On the face of it the as-

sumption is false, for, although the majority of physicians probably do smoke, all of these do not smoke cigarettes, and there is as great a diversity of taste among physicians as there is among laymen.

For some time we have been impressed with the attractiveness of cigarette advertisements. The frequency with which a package of cheap cigarettes and a really beautiful healthy girl appear in such displays is noticeable. And yet, how much more often is the cigarette in real life associated with a girl who has to resort to rouge and lipstick, partly, at least, because of the cigarette. Or we see packages of cigarettes displayed with a football hero plunging through the line and are led to infer that perhaps before and after the game the portrayed hero has indulged in a cigarette of that particular brand. Those who have ever trained for any athletic sport know that smoking of any sort is an indulgence which is taboo.

Perhaps it hasn't occurred to our readers that MINNESOTA MEDICINE has never carried advertisements of tobacco in any form. We have simply followed the lead of the best medical journals in an effort to advertise only such articles as we could conscientiously recommend.

Cigarette smoking increased by leaps and bounds during the war. Because of so many hardships and so few physical comforts the cigarette was condoned. Cigarette advertising has probably played some part in altering public opinion, but when it comes to haling 140,000 physicians to further the sales of a certain cigarette the whole proposition is so absurd that it is funny.

---

### The Call to Positive Health

The medical profession, in the long past, has been educated to the study of the human being in disease rather than in health. Even in our medical schools the study of norms has been undertaken not as an end, but as a means, and has been curtailed at that. Anatomy has been treated as an introduction to internal medicine and practical surgery. But very recently and to fine purpose it has acquired a functional emphasis. Physiology has had its chief significance as a key to the understanding of disturbed function. Etiology, bacteriology, pathology, diagnosis and therapeutics have been, and perhaps necessarily

for the time being, the over-shadowing interests of the course.

And why not? Remedial medicine has been the almost exclusive business of the doctor. The call of sickness has been imperative. It remains the most exigent demand upon him. To get the patient well has been his absorbing and almost his only concern.

The routine of his daily life in office, home or hospital; the bent of his too scanty reading; his contributions to the literature of his calling or to the program of his professional societies have been bounded by the consideration of the abnormal.

Perforce he has left the study and the teaching of personal and communal hygiene—still more broadly speaking of public health—to the very few medically trained men and women who have found a peculiar interest outside of practice and within the field of preventive medicine; to a somewhat larger group of specifically health-trained doctors, psychologists and sociologists and to the greatly larger army of public health nurses and social service workers who have become, as Winslow puts it, the ministers and missionaries of health to the people.

And, then, in the meanwhile, in a period extending, in fact, over but little more than half a century, and mostly within half of that time, the science of human health has most marvelously unfolded itself and the consciousness of the people has most widely awakened to its value.

Striking a strong note of contrast to the call of the past to the well-nigh exclusive practice of remedial medicine—of what we may perhaps fitly term the study of negative health—there is sounding forth a new note of demand for the development and the practice of *positive health*.

This development follows two phases of progress—the one, the phase of health preservation, as a long step in advance of health restoration; the other, the phase of health promotion—a definite movement toward human betterment, physically, mentally and socially considered.

Fortunately for the part the medical profession may take in this development, there is late evidence that it desires to take its part. It should take the rôle of the teacher, the leader—but the writer would not be the faithful friend of the profession to which he himself belongs, if he did not suggest that it has much to learn

before it should assume too forwardly the task of teaching and leadership. For, while the profession has been so inevitably busy with the primary functions of remedial medicine, the followers of public health have been learning a great deal and many of them are already sharing in the work of directing and educating the people. There is much for all of us to learn who would “keep abreast of truth” in this public health field.

Among us is already a forward-looking, forward-moving, well-informed group of pediatricists by whom the signs of the new times have been early recognized. The call to the recent health conference in Minneapolis is a fine confession of faith and practice in the new gospel of positive health upon the part of a yet larger group. It should lead to an era of good works in Minnesota.

Another and still more significant evidence of interest upon the part alike of profession and people is seen in the call to a second Northwest Conference on Child Health and Parent Education, second to that put through with conspicuous success in Minneapolis last March, and to be held in March, 1928, in the city of Saint Paul.

Some eighty organizations, of state, county and civic character, and including medical, public health, nursing, educational and social groups have already had invitation to join in forming, through their representatives, a joint committee in general charge of the Conference. This support will be generous and will insure the educational value of this second effort for the promotion of child study and educated parentage.

In the next issue of MINNESOTA MEDICINE, we shall be able to announce the organization of the Conference under its selected officers and committees. These columns will give it full and free publicity.

The Ramsey County Medical Society has joined in the invitation to the holding of the Conference in Saint Paul, and it, together with the Hennepin County Medical Society, and their Ladies' Auxiliaries, and two District Dental Societies and their Auxiliaries, the Minnesota State Medical Society, the Minnesota State Public Health Association, and the Minnesota State Dental Association are among its invited sponsors.

May we hope that the medical profession of

this and adjoining States will make it a point to attend, in large numbers, the three days' sessions of the Conference in the latter part of next March. It has it within its power to make this occasion a still more notable one than its predecessor of last year in Minneapolis, to give a strong impetus to fathers, mothers, teachers and health workers in the direction of intelligent child study and parenthood. For the hopes of human betterment rest upon pre-natal effort, upon the study of the infant, the young child and the adolescent—in a word, of those periods when life is in the making.

RICHARD OLDING BEARD, M.D.

EDITOR'S NOTE: The success of the first Northwest Conference on Child Health and Parent Education held in Minneapolis last March was due to the energy and executive ability of Dr. Richard Olding Beard, Professor Emeritus of the University of Minnesota, Executive Secretary to the Hennepin County Public Health Association, and also to the Northwest Conference on Child Health and Parent Education. The Conference is fortunate in having obtained the services of Dr. Beard for the second meeting to be held in March of this year in Saint Paul.

## COMMUNICATIONS

The attention of the profession is called to the following letter, and readers are urged to act according to the suggestions made in the letter.

Dear Doctor:

The New England Anti-Vivisection Society has sent out a form letter announcing its plan to "introduce into the House of Representatives, at Washington, during the coming session, a bill for the exemption of dogs from vivisection." The letter requests the addressee to circulate an accompanying petition in support of the bill and to ask his representative in Congress to vote for it. The Society alleges that the "International Conference for the Investigation of Vivisection, which now includes eighty-six anti-vivisection and humane societies," is sponsor for the bill.

Congress cannot directly restrict scientific research in any state. What Congress does, however, will be an important factor in determining action by state legislatures. The anti-vivisectionists are alive to this fact. They therefore seek legislation by Congress, for the District of Columbia and other places under exclusive federal jurisdiction, in order to establish a legislative pattern that the states may be induced to follow. Moreover, it has been frankly confessed on behalf of anti-vivisection interests that if a bill to prevent scientific research involving the use of dogs is enacted, they will probably promote legislation to prevent the use of other animals for such research.

To prevent the enactment of legislation that will hinder scientific research in the District of Columbia and other places under federal control and that will be urged as a pattern for the enactment of similar legislation in your own state, it is important that you file with your senators and representatives, immediately, protests against the enactment by Congress of the bill

now proposed by the New England Anti-Vivisection Society.

Yours truly,

WM. C. WOODWARD,

Executive Secretary,

Bureau of Legal Medicine and Legislation.

## OBITUARY

### Dr. Anton Shimonek

Dr. Anton Shimonek, one of the older prominent surgeons of Saint Paul, died November 23 at the age of seventy.

Anton Shimonek was born at Manitowoc, Wisconsin, in 1855. He obtained his medical degree at Rush Medical College in 1879, following which he took post-graduate work for two years at Prague and Vienna and then began practicing at Beaver Dam, Wisconsin. Dr. Shimonek came to Saint Paul in the winter of 1884, continuing in the practice of surgery the rest of his life.

Dr. Shimonek was on the original staff of the City and County Hospital (Ancker Hospital) and was among the first surgeons in this part of the country to operate for appendicitis. He did pioneer work in clinical pathology and was a lecturer at the old Saint Paul Medical school, later at the Hamline Medical school. For years Dr. Shimonek gave surgical clinics in the University of Minnesota Medical school.

Besides being a member of the Ramsey County Medical Society, the State Medical Association and the American Medical Association, Dr. Shimonek was also a fellow of the American College of Surgeons and a member of the Minnesota Academy of Medicine.

### Dr. Emery Herbert Bayley

Dr. E. H. Bayley, a practicing physician in Lake City for thirty-three years, died at his home, Monday, December 19, at the age of 62.

Dr. Bayley was born at Vernon Center, Wis., Nov. 18, 1865. At the age of fourteen years he moved with his grandparents to Greeley, Colorado, where he graduated from the high school. He later graduated from the University of Colorado at Boulder, and in 1893 from Rush Medical College in Chicago. Dr. Bayley came to Lake City in 1894 and took up his medical practice. In 1896 he was married to Miss Katherine Covell of Maquoketa, Iowa.

Below is given a brief story of Dr. Bayley's professional life by one of his friends and associates in the profession.

"Emery Herbert Bayley, M.D., obtained his preliminary education at Greeley High School and University of Colorado, graduated from Rush Medical College, in 1893, served one year at Asbury Hospital, Minneapolis, and located in Lake City, Minnesota, April first, 1894.

"He became a member of the Wabasha County Medical Society in 1895, served as its president in 1899 and

again in 1913. He was a member of the Minnesota State Medical Association, the A. M. A. and several other medical and public health organizations.

"During his professional career, he contributed a number of papers to medical journals, was an active practitioner, and prominent in public health work; was for many years County Health Officer, and to the time of his death, City Health Officer for Lake City. Since its inception in 1911, he had been president of the governing body of Buena Vista Sanatorium, the Wabasha County sanatorium for the tuberculous.

"Doctor Bayley had also been an active participant in civic affairs, having held positions on the school board, on the board of trustees of the Congregational church, and in the various fraternal organizations of which he was a member.

"It goes without saying that he was a man of the highest character, and ever lived up to the best ethical standards in his personal and professional contacts.

"The officers of the Wabasha County Medical Society feel they can render no more fitting tribute to their departed member than to cite his professional history and achievements; nor can we offer any better sympathy to the bereaved than to point to his record and quote his oft repeated wish that he might continue in the midst of his activities until death."

## REPORTS AND ANNOUNCEMENTS OF SOCIETIES

### TO THE MEMBERS OF THE MINNESOTA STATE MEDICAL ASSOCIATION:

In the past few days a copy of the new Constitution and By-Laws has been sent to every member in good standing. Please save this for future reference.

Requests are constantly coming into this office for duplicates of material that has been sent to all members. It is impossible to anticipate such requests, and we suggest that every member provide himself with a folder for such material and keep it all filed in his desk.

Members of the State Medical Association are urged to pay their dues for 1928 promptly. The dues are payable by January first each year and delay by members only complicates the work of the Secretary-Treasurer. Not infrequently communications reach the Secretary's office making inquiry whether certain physicians are members of the State Association. Letters sometimes come from insurance companies requesting information relative to physicians in view to their appointment as examiners or in regard to medical insurance and the like; also from secretaries of State Boards of Medical Examiners to whom a physician has made application for license. When members have not paid their dues the Secretary's office can simply make the statement that "the applicant is not a member because he has not paid his dues and is therefore not a member of his county society, the State Association, or the American Medical Association. We regret our inability to furnish you further information."

### RICE COUNTY MEDICAL SOCIETY

The annual meeting of the Rice County Medical Society was held in the Stuart Hotel, Northfield, Wednesday, November 30.

Drs. J. M. Murdock, superintendent of the State School for Feeble Minded, Ethel R. Beede, A. L. Haynes and O. S. Neseth were elected to membership.

Dr. C. C. Chatterton, of Saint Paul, gave a very instructive talk on "Intracapsular Fracture of the Hip" which was freely discussed by the members present.

Dr. N. O. Pearce and Dr. C. B. Wright, president of the Minnesota State Medical Association, outlined the aims and objects of the University extension course in post-graduate work. The matter was referred to a committee for further investigation.

Officers for 1928 were elected as follows: President, Dr. P. A. Smith, Faribault; first vice president, Dr. W. E. Wilson, Northfield; second vice president, Dr. D. W. Francis, Morristown; secretary-treasurer, Dr. C. J. Plonske, Faribault; delegate, Dr. D. E. McBroom, Faribault, for two years; alternate, Dr. F. S. Warren, Faribault; censors, Dr. P. A. Smith, Faribault; Dr. Joseph Moses, Northfield; Dr. C. A. Traeger, Faribault.

### THE A. M. A. MEETING

Arrangements are being made for the scientific exhibit of the Minneapolis Session of the American Medical Association, June 11 to 15, 1928. The scientific exhibit will be located in the Municipal Auditorium. Applications must be sent in before March 20, to the A. M. A. headquarters, 535 North Dearborn Street, Chicago, Illinois. No assignment of space will be made before April 15.

### STEELE COUNTY MEDICAL SOCIETY

Dr. E. Q. Ertel was elected president of the Steele County Medical Society at its annual meeting, Wednesday, November 9.

Other officers named are: Vice president, Dr. E. W. Senn, Owatonna; secretary, Dr. J. A. McIntyre, Owatonna; treasurer, Dr. F. M. Smersh, Owatonna.

Dr. T. C. Quigley, Owatonna, retiring president, was named delegate to the annual meeting of the Minnesota State Medical Association. During the evening's program District Judge F. W. Senn discussed medical questions from a legal viewpoint.

### RAMSEY COUNTY MEDICAL SOCIETY

At the November meeting of the Ramsey County Medical Society the following officers were elected for the ensuing year: Dr. E. M. Jones, president; Dr. Wallace H. Cole, vice president; Dr. Albert G. Schulze, secretary-treasurer (re-elected); Dr. Charles D. Freeman, member of Board of Trustees of the Boeckmann Building Fund (re-elected).

### MOWER COUNTY MEDICAL SOCIETY

At the annual meeting of the Mower County Medical Society held November 17 at Austin, the following officers were elected for 1928: President, Dr. G.

R. Melzer, Lyle; vice president, Dr. C. L. Sheedy, Austin; secretary, Dr. Herbert Fisch, Austin; treasurer, Dr. A. E. Henslin, Le Roy.

#### SCOTT-CARVER COUNTY MEDICAL SOCIETY

The Scott-Carver County Medical Society held its quarterly meeting at Jordan, Minnesota, Sept. 29, 1927.

After the transaction of routine business Dr. W. F. Braasch, president of the State Medical Association, gave a very instructive address on "Renal Calculi." Dr. C. B. Wright, president-elect, gave an interesting discussion on the subject of "Medical Economics." Dr. H. A. Schneider entertained the members at a banquet at the Merchants Hotel.

#### NICOLLET-LE SUEUR COUNTY MEDICAL SOCIETY

The winter meeting of the Nicollet-Le Sueur County Medical Society was held in Le Sueur, Dec. 13, 1927.

The business session followed a banquet given at the Le Sueur Hotel. On motion, Dr. M. E. Lenander and Dr. M. C. Peterson were elected members of the Society. The Board of Censors reported favorably on the application of Dr. Louisa Kirschbaumer, graduate of the University of Vienna in 1918, whose license in United States is pending.

The annual election of officers resulted as follows: President, Dr. Hewson; vice president, Dr. Swan Ericson, Le Sueur; secretary, Dr. J. W. Daniels, St. Peter; treasurer, Dr. F. P. Strathern, St. Peter.

Dr. Ericson was elected delegate to the State Medical Association and Dr. Daniels, alternate. Dr. Aitkens was elected censor.

The scientific program included a paper by Dr. H. B. Aitkens on "Alcohol—Its Physiological Effect and Medical-Legal Aspect."

Dr. F. P. Strathern reported a case of "Ectopic Pregnancy" and Dr. M. C. Peterson reported a case of "Spontaneous Rupture of the Heart."

### OF GENERAL INTEREST

Dr. Nellie Barsness of Saint Paul has returned from Vienna and has resumed practice at 541 Lowry Building.

Dr. Fred L. Adair of Minneapolis announces the limitation of his practice to diseases of women, pathological obstetrics and consultations.

The engagement has been announced of Miss Helen Callaghan to Dr. J. Richards Aurelius of Saint Paul. The wedding will take place February 11.

Dr. Woodard Colby of Saint Paul has announced the removal of his offices to 814 Lowry Building. Dr. Colby limits his practice to diseases of infants and children.

Public health reports this fall have shown the prevalence of an unusual number of cases of poliomyelitis in California, Oregon, Illinois, Indiana, Michigan, New York and Massachusetts.

Dr. E. Libman of New York addressed the Minnesota Pathological Society, November 22, on the sub-

ject of "Observations on Endocarditis with Special Reference to Healing in the Subacute Bacterial Variety."

Dr. V. C. Crowl, formerly of Bertha, Minnesota, who has been in California for the past two years, is now located at Home Gardens, California, and has transferred his membership to the Los Angeles County Medical Society.

Doctor Koob, who recently finished his internship at Duluth, Minnesota, has taken over the operation of the hospital at Richmond, Minnesota, which was left vacant by Dr. R. N. Jones, who recently moved to St. Cloud, Minnesota.

Dr. Emil Geist and Dr. Myron O. Henry of Minneapolis have announced the formation of a partnership in the practice of medicine, beginning January first. Dr. Henry was associated with Dr. Geist prior to undertaking his own private practice.

Dr. Richard O. Beard, executive secretary of the Hennepin County Public Health Association, has accepted the post of general secretary and will be in charge of the Northwest Child Health and Parent Education Conference to be held in Saint Paul in 1928.

Drs. W. H. Goeckerman, H. G. Irvine, Paul O'Leary and H. E. Michelson of the Minnesota Dermatological Society attended the meeting of the Mississippi Valley Dermatological Association held in St. Louis on November 19. The 1928 meeting of the association will be held in Minneapolis and Rochester.

Announcement has been received of the marriage of Miss Josephine Anderson of Saint Paul to Dr. Emmett A. Heiberg of Fergus Falls. Miss Anderson is well known to members of the profession in Saint Paul, having been in charge of the operating room at St. Luke's Hospital for a number of years.

Dr. A. C. Strachauer, professor of surgery and director of the Cancer Institute, University of Minnesota, gave a talk on "Cancer, illustrated by lantern slides," at the scientific meeting of the northern district (including North Dakota and Manitoba) of the American College of Surgeons in Duluth, November 17, and 18.

The annual conference of the secretaries of the component societies of the State Medical Association will be held in Saint Paul, January 14. At this conference, which has come to be a yearly affair, matters of importance to each component society will be discussed and each secretary is urged to make every effort to attend.

On Dec. 1, 1927, a new clinic was organized under the name of St. Cloud Clinic, with offices in St. Mary's building. The personnel of the clinic is made up of Dr. M. J. Kern, x-ray and physiotherapy department; Dr. T. N. Fleming, eye, ear, nose and throat department; Dr. H. B. Clark, department of internal medicine, and Dr. R. N. Jones, department of surgery.

The physicians in Pelican Rapids, Minnesota, this fall published a public signed announcement that patients indebted to local physicians, who have not made satisfactory payments within the year, will be refused treatment by the other local physicians, whose names appear. The main reason given for the necessity for

this step is the wide prevalence of installment plan purchasing to the extent that no provision is made for payment for hospitals and physicians.

The St. Cloud Hospital which has been under construction for the past two years is nearing completion. Equipment and furniture are being moved in and the building will be ready about January 15. There will be three hundred beds, of which two hundred will be available for patients and the other one hundred will be used for nurses and hospital help. The building was built by the Benedictine Sisters of St. Joseph, Minnesota, who have operated the present St. Raphael's Hospital at St. Cloud. The cost of the new structure will total, with equipment, two million dollars. The old hospital will be used for a home for the aged under the direction of the present owners.

## NEW AND NON-OFFICIAL REMEDIES

The following articles have been accepted by the Council on Pharmacy and Chemistry:

### ABBOTT LABORATORIES:

- Staphylococcus Mixed Bacterin
- Typhoid Prophylactic, 5 c.c. vials
- Typhoid Prophylactic, 20 c.c. vials

### LEDERLE ANTITOXIN LABORATORIES:

- Anaërobic Antitoxin (Polyvalent)-Lederle

### MERCK & Co., INC:

- Erythrol Tetranitrate Tablets-Merck,  $\frac{1}{4}$  grain

### H. K. MULFORD Co.:

- Ampuls Dextrose (d-Glucose) 10 Gm., 20 c.c.
- Ampuls Dextrose (d-Glucose) 25 Gm., 50 c.c.

### PARKE, DAVIS & Co.:

- Ephedrine Sulphate-P. D. & Co.

### PROPHYLACTO MFG. Co.:

- Ephedrine Hydrochloride-Pemco.

### E. R. SQUIBB & SONS:

- Insulin-Squibb, 100 units, 10 c.c.

### TAILBY-NASON Co.:

- Nason's Palatable Cod Liver Oil.

## TRUTH ABOUT MEDICINES

*Scarlet Fever Streptococcus Toxin-Squibb.*—This product (New and Non-official Remedies, 1927, p. 375) is now marketed in packages of five vials of toxin containing, respectively, 500, 2,000, 8,000, 25,000 and 60,000 skin test doses; in packages of fifty vials of toxin, ten containing 500 skin test doses, ten containing 2,000 skin test doses, ten containing 8,000 skin test doses, ten containing 25,000 skin test doses, and ten containing 60,000 skin test doses. E. R. Squibb & Sons, New York.

*Sulpharsphenamine-DePree.*—A brand of sulpharsphenamine (New and Non-official Remedies, 1927, p. 80). It is supplied in ampules containing, respectively, 0.1, 0.15, 0.2, 0.3, 0.4, 0.45, 0.6, 1.0, and 3.0 Gm. The

DePree Co., Holland, Mich. (Jour. A. M. A., November 5, 1927, p. 1607.)

*Ephedrine Hydrochloride-Pemco.*—A brand of ephedrine hydrochloride-N. N. R. For a discussion of the actions, uses and dosage of ephedrine hydrochloride, see *The Journal A. M. A.*, March 19, 1927, p. 925. Prophylacto Manufacturing Co., Chicago.

*Ephedrine Sulphate-P. D. & Co.*—A brand of ephedrine sulphate-N. N. R. For a discussion of the actions, uses and dosage of ephedrine sulphate, see *The Journal A. M. A.*, March 19, 1927, p. 925. Parke, Davis & Co., Detroit. (Jour. A. M. A., November 12, 1927, p. 1693.)

*Nason's Palatable Cod Liver Oil.*—Cod liver oil containing 0.62 per cent of essential oils as flavoring, having a vitamin A potency such that 0.002 Gm. per day is adequate to promote the growth of young albino rats and a vitamin D potency such that 0.02 Gm. per day for eight days will cure experimental rickets in rats which have been deprived of vitamin D and of ultraviolet light. Tailby-Nason Co., Boston.

## PROCEEDINGS OF THE MINNESOTA ACADEMY OF MEDICINE

Meeting of September 14, 1927.

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Wednesday evening, September 14, 1927, at 8 o'clock. Dinner was served at 7 o'clock. There were 29 members present.

In the absence of the President, the meeting was called to order by Dr. H. L. Ulrich.

The minutes of the May meeting were read and approved.

The Secretary-Treasurer's reports for 1926-27 were read and approved.

A letter was read from the President, Dr. F. E. Burch, asking that the reading of his Presidential Address be postponed to the October meeting on account of his absence from the city.

The election of officers resulted in the following being elected for the ensuing year:

President.....Dr. John E. Hynes (Minneapolis)  
Vice-president.....Dr. C. N. McCloud (St. Paul)  
Secretary-Treasurer.....Dr. Carl B. Drake (re-elected)

The scientific meeting of the evening was as follows:

DR. E. M. HAMMES (St. Paul) reported a case of streptococcic meningitis associated with otitis media, with a radical operation. (Case was seen in consultation with Dr. A. W. Hilger.) During the course of the acute illness to the time of death there was no evidence of meningeal irritation, although the spinal fluid was of a markedly purulent character and contained many streptococci. Detailed report of the case will be published.

### DISCUSSION

DR. HAMMES: I would like to ask some of the ear men whether it is not unusual to have meningitis

develop twenty-four hours after operation, with the dura showing nothing at the time of operation?

DR. HENRY F. HELMHOLZ (Rochester) read his Thesis, entitled "Elective Localization of Colon Bacilli in the Kidney." Lantern slides were shown.

#### DISCUSSION

DR. W. R. RAMSEY (St. Paul): We are all, not only as pediatricians, very much indebted to Dr. Helmholtz for this very excellent work, because it really, after a good many years of rather intensive work all over the world on this subject, has been able to show something positive. It is rather interesting to note that with all his work he has not been able to demonstrate by what route infants get pyelitis—whether by the blood route or some other. Some years ago I was among the first, in this country at least, to report cases of pyelitis, as I had been doing some work in Escherich's Clinic in Vienna, where he had done a good deal of work on the colon bacillus as the cause of pyelitis. About twenty years ago Dr. Greene asked me to read a paper on obscure fevers in children and when I returned home I read a paper on pyelitis, because that explained most of the obscure fevers in children. A few years ago I found that severe symptoms could occur without pus being found in the urine, but usually was able to find the colon bacillus in the urine for several days at a time. The fact, however, that there are certain strains of colon bacilli that tend to localize in the pelvis of the kidney and produce pyelitis, is a very distinct and original research for which we can thank Dr. Helmholtz.

DR. H. L. ULRICH (Minneapolis): I would like to ask Dr. Helmholtz if he noticed any relation to the amount of bacilli injected and the amount excreted?

DR. HELMHOLTZ (in closing): In answer to Dr. Ulrich's question, our previous work on the passage of bacilli through the kidney makes us believe that only after actual renal lesions have been produced do bacilli pass through the kidney. Of course, this problem is old and dates back to 1886 when Wyssokowitz started the ball rolling. There has been a great deal of work both pro and con. Our experiments seemed to indicate that the uninfected kidney did not allow bacilli to pass through. If a fresh animal was used for each experiment we practically never found that any bacilli passed through the renal filter in five hours. After seven hours virulent staphylococci regularly appeared in the urine and regularly produced abscesses in twenty-four hours. We repeatedly injected avirulent streptococci, staphylococci, and colon bacilli into the blood stream and at no time within twenty-four hours did they appear in the urine.

In regard to what Dr. Ramsey said about modes of infection, I feel that we have made one contribution. In studying bacilluria in the rabbit, of twenty-five animals two had definite pyelitis and had bacilli in the

ureteral urine, and twenty-three had bacilluria in the bladder only, so that I feel that in the study of these infections we are dealing with an ascending infection in the urinary tract.

DR. F. J. HIRSCHBOECK (Duluth) read his Thesis, entitled "Massive Collapse of the Lung." Lantern slides were shown.

#### DISCUSSION

DR. C. B. DRAKE (St. Paul): I think this is a very interesting subject and one to which it is well to have the attention of the surgeons as well as the medical men called. It occurs much more frequently than we have thought. I know that since the condition has been called to my attention I have been on the lookout for it and just during the past summer I have seen two cases. One followed an appendectomy which responded beautifully to this maneuver of turning the patient on the uninvolved side and telling him to cough. The other case was that of an old woman, following a cholecystectomy some three weeks previous, where I was very suspicious of the condition, but it was not marked enough to be sure on physical examination. The maneuver of turning her onto the unsuspected side probably prevented her from developing a more extensive collapse. I was just wondering whether some of these pneumonias in elderly individuals are not collapse of the lung, or begin that way. I never thought of this condition as coming with pneumonia. Another patient (a physician) with pneumonia, whom I helped to take care of, coughed up a lot of material and, being a doctor, felt sure he had a lung abscess. An accompanying lung collapse would explain this occurrence. Of course it would be rather difficult to be sure of such a complication without the evidence of an x-ray examination.

DR. H. F. HELMHOLTZ (Rochester): I am very much interested in Dr. Hirschboeck's paper and think it might be of interest to report on a paper of Crozier Griffith of Philadelphia given before the American Pediatric Society, calling attention to the fact that not only in massive collapse of the lung, but in pneumonia also, was the heart occasionally drawn to the affected side. He presented a series of five cases of definite pneumonia in which the heart was drawn to the affected side.

DR. HIRSCHBOECK (in closing): It had not occurred to me that this condition occurred in older people. In older people the congestion is usually bilateral and this condition is unilateral in most instances. I don't know what Dr. Griffith based his views on, but it is just possible that what he found may have been pneumonia atelectasis. It may be that Dr. Griffith's cases were of the pneumonic type, as described by Dr. Abt.

The meeting adjourned.

CARL B. DRAKE, M.D.  
Secretary.

## CASE REPORTS

Members are requested to report interesting and unusual cases for publication in this department. Many cases reported at hospital staff meetings and similar meetings are very instructive and worthy of publication.

### RETROPERITONEAL FIBROMYOMA\*

REPORT OF A CASE

ELOISE PARSONS, M.D.

Fellow in Medicine, The Mayo Foundation  
Rochester, Minnesota

Retroperitoneal fibromyoma was found in a patient who also had multiple fibro-adenomata in the breast, a large ovarian cyst, and a bicornute uterus.

A married woman, aged 28, came to the Mayo Clinic January 24, 1927, because of a lump in the left breast which she had discovered accidentally two years previously. The lump had been gradually increasing in size and became larger and somewhat tender at the menstrual periods. A second lump had been found one year after the first was noted, and a third about a month before the patient presented herself for examination. There were no other complaints except severe dysmenorrhea which caused her to go to bed for three or four hours after the onset of the menstrual flow, which occurred at regular intervals but was profuse. There was a family history of carcinoma; one grandfather died of carcinoma of the lip, and the other of carcinoma of the stomach. The patient had an infection diagnosed whooping cough when four years of age, which caused paralysis of the right foot. Marked contracture and deformity resulted and could not be corrected even by operation performed when she was fourteen years old. She had scarlet fever at the age of seven, diphtheria at eight, and influenzal pneumonia at nineteen. She had been married ten years, and had been pregnant twice; there was miscarriage at two months soon after marriage, and two years later a normal child was born after very difficult labor.

The patient was a small woman, 4 feet 9 inches tall, and weighed 105 pounds, her usual weight. Nodules which were firm but not attached were present in the upper outer quadrant of the left breast. The edge of the liver was palpable, and an indefinite mass could be felt in the median line and the right lower quadrant of the abdomen; in the pelvis there was a mass the size of a three months' pregnancy, diagnosed tumor of the ovary, and palpation of the uterus suggested bicornute uterus. Examinations of the blood and urine were negative. The blood Wassermann test was negative. Roentgenograms of the chest and urinary tract were negative.

At operation a tumor, about 12 cm. in diameter, was removed from the outer quadrant of the left breast; the pathologic diagnosis was multiple fibro-adenoma

averaging 8 mm. in diameter, occurring with chronic mastitis.

Abdominal exploration through a median-line incision revealed a hemorrhagic cyst about the size of a three months' pregnancy in the right ovary; the cyst was removed, together with the right tube and ovary. The appendix, which was definitely diseased, was removed. The uterus was bicornute with a definite sulcus between the two halves, and probably contained two partial uterine cavities. The uterus was brought up into position and held there by internal shortening of the round ligaments. The ovarian lesion proved to be benign multilocular tarry cyst, the largest cyst being 8 cm. in diameter.

Exploration of the upper portion of the abdomen revealed a retroperitoneal tumor, about 15 cm. in diameter, in the right suprarenal region, apparently not

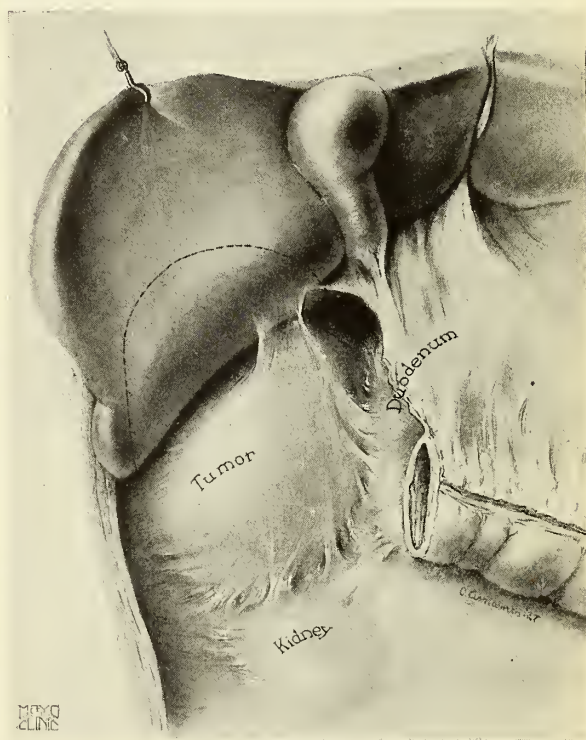


Fig. 1. Anatomic relationships of large retroperitoneal tumor in right suprarenal region.

connected with the kidney (Fig. 1). Two weeks later this tumor was removed. It proved to be a large single fibromyoma which was situated above the right kidney and below the liver. It had no connection with the pancreas. Its blood supply came from the median line. The tumor was 15 by 11 by 9 cm. and weighed 850 gm. (Fig. 2).

Recovery was uneventful. The patient writes six months later that she is perfectly well, has gained 10 pounds, and is free from dysmenorrhea.

#### DISCUSSION

Benign retroperitoneal tumors are unusual; about 200 have been reported in the literature. Masson and Horgan, in 1921, reported twelve cases of retroperi-

\*Patient observed on the service of Dr. James C. Masson, Mayo Clinic. Submitted for publication November 26, 1927.



Fig. 2. Large single retroperitoneal fibromyoma, 15 by 11 by 9 cm., weighing 850 gm.

toneal lipoma from the Mayo Clinic. C. H. Mayo and Dixon reported three cases in 1927 and stated that twenty-two patients with retroperitoneal lipoma have been operated on at the Mayo Clinic since 1910.

Magoun reported two cases of retroperitoneal fibromyoma operated on at the Mayo Clinic previous to 1919. He reviewed the literature and found only five

cases reported. Outlines of the four cases of retroperitoneal fibromyoma which have been operated on since 1919 at the Mayo Clinic are shown in the tabulation.

Since 1919 there have been few cases of retroperitoneal fibromyoma reported in the literature. Ogilvie reports the case of an unmarried woman, aged 55, in whom the fibroma was attached to the second and third lumbar vertebrae. It was on the left side and was about the size of an orange. The blood supply came from the lumbar arteries. The origin was assumed to be the anterior common ligament.

A very large fibroma, 25 by 20.5 by 14 cm., weighing 4,750 gm., is reported by Dannheisser, in a patient aged thirty-seven years. Histologically red degeneration, necrotic areas and hyalinization were found.

Bevers reports a large retroperitoneal fibromyoma attached to the apex of the bladder in a woman aged 49. He believes that its origin may have been either the bladder or the urachus. There are other reports of fibroma of the bladder to substantiate this opinion.

Fibromyomas are reported in other areas, in the mesentery, in the heart, and in the wall of the stomach and intestines.

The origin of the fibromyoma in the case here reported can only be a matter of speculation. About 90 per cent of myomas develop in the intermediate

TABULATION  
SUMMARY OF FOUR CASES OF RETROPERITONEAL FIBROMYOMA OPERATED ON (1919-1927)

Case	Date	Age, Sex	Symptoms	Attachment and site of tumor	Weight and Size	Pathologist's Diagnosis
1	3-28-21	55 M	Loss of weight and strength for six months; epigastric pain and pressure with vomiting.	Retroperitoneal tumor size of four months' pregnancy, below pole of right kidney; tumor excised through incision in mesocolon outside ascending colon.	580 gm., 14 by 9 cm.	Degenerating edematous fibromyoma
2	1-16-25	66 M	Growth in the upper portion of the abdomen without symptoms for three months.	Large tumor which seemed to originate from the left side of the pelvis, attached to the mesocolon, sigmoid and sacrum.	2800 gm., 24 by 17 cm.	Hyaline edematous degenerating fibromyoma
3	8-13-26	21 F	Leukorrhea	Absolutely detached from uterus or broad ligament with blood supply from lateral and posterior wall of pelvis; altogether retroperitoneal with vascular adhesions throughout.	390 gm., 9 cm. in diameter	Parasitic degenerating fibromyoma
4	1-24-27	28 F	Tumor of breast	Details given in case report.	850 gm., 15 by 11 by 9 cm.	Fibromyoma

layer of the smooth muscle of the uterus, but they may develop in any smooth muscle. As they increase in size the site may change, and even the blood supply may change, as shown by Masson in a discussion of parasitic fibromyoma. Masson also reports one case of large retroperitoneal fibromyoma attached by a pedicle to the cervix to show how such a fibromyoma may become parasitic. In the case reported here there is no indication of any relation of the tumor to the uterus.

The presence of multiple fibro-adenomas in the breast is regarded as a coincidence, although in certain persons there is an evident tendency toward tumor formation. The excess of fibrous tissue in such widely separated situations is interesting.

The inheritance of this patient was investigated as carefully as possible. The mother and father are living and normal; there are two sisters with healthy children. The death of the two grandfathers from cancer made the patient concerned about the tumors in the breast. Her one child is normal in every way. The patient is above the average in mentality. That there was deficiency in the germ plasm of this patient or in the embryologic development is shown by the presence of the bicornute uterus. She had been pregnant twice without retroperitoneal tumor or bicornute uterus being diagnosed. There is not sufficient evidence to trace the origin of the fibromyoma to smooth muscle left in the faulty embryologic development of the Müllerian ducts.

The large, tarry ovarian cyst has no particular embryologic significance. Its presence was the occasion for the laparotomy during which the symptomless retroperitoneal tumor was discovered.

#### SUMMARY

Retroperitoneal fibromyoma is rare. In 1919 there were reports of eight cases in the literature, two from the Mayo Clinic. There have been four others at the Mayo Clinic since 1919, one of which is reported here.

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## ACUTE YELLOW ATROPHY OF THE LIVER\*

REPORT OF CASE

RUSSELL J. MOE, M.B.

Duluth, Minnesota

In view of the comparative frequency of occurrence of acute yellow atrophy of the liver in this hospital, I have undertaken a brief review of the subject. Many authors state that acute yellow atrophy is a rare disease. Osler states that among 28,000 medical cases admitted to Johns Hopkins Hospital in nearly twenty-three years there were only three cases. At this hospital we must take exception to the former statement because we have had during the past sixteen months (July 1, 1926, to November 1, 1927) four cases, all of which terminated fatally and the diagnosis proved at necropsy.

A review of the essential findings of these four cases is shown in Chart I.

The age incidence is in the early part of the third decade, ranging from twenty-one to twenty-three years. Three cases were in females and one in a male. One case may be termed as a fatal complication of pregnancy. Stupor, delirium, and loss of consciousness were present in all four cases. The duration of the illness varied from nine to twenty-two days. The liver of a normal individual weighs 1,500-1,800 grams. The weight of the liver in these cases varied from 540 to 1,640 grams and it is interesting to note that the largest liver was found in the case associated with pregnancy and this case was also of the shortest duration. Focal infections are now being studied as probable etiological factors in acute yellow atrophy. Case I showed a chronic ethmoid and frontal sinusitis, while Case IV had generalized dental caries.

Report of Case IV. The patient was a male Norwegian, 21 years of age, single, who had lived in Duluth only two months. For about a year previous to that time he had been a sailor and had visited Africa, Italy, Spain and various other countries. No further information as to past history nor family history could be obtained.

On July 15, 1927, patient first became ill with weakness, headache and icterus. He went to see a physician, who advised him to enter the hospital. This was refused, so the patient was kept under treatment at home for a week, at the end of which time he felt somewhat improved and returned to his work at day labor. He remained at work for two days, but finally became so weak he was forced to quit. The jaundice had increased in intensity. He was admitted to the hospital on July 31. The was stuporous and seemed very much confused. At times he would become delirious and very restless, so much so that it was necessary to keep him in restraint. The temperature was slightly subnormal and the pulse was 60, of good quality. He presented a 3+ icterus of skin and sclera. Teeth showed absence of upper incisors and generalized dental caries. Chest and heart were negative. The abdomen was

\*From the Medical Service of St. Luke's Hospital, Duluth, Minnesota.

soft and not tender. The liver and spleen were not palpable. The upper extremities showed occasional twitching movements suggesting advanced toxicosis or meningeal irritation.

Laboratory findings were: Hb. 95 per cent, R.B.C.

4. Hemolytic jaundice. Ruled out by blood picture, non-palpable spleen and icterus index.

The disease progressed rapidly. The stupor and delirium gave way to loss of consciousness with Cheyne-Stokes respiration and profuse perspiration. A prog-

CHART I

Case	Age	Sex	Assoc. with Pregnancy	Icterus	Delirium	Days Duration	Liver Wt. Gm.	Focal Infection
I	22	F	0	+	+	15	540	Frontal and Ethmoid sinusitis
II	21	F	0	+	+	22	755	
III	23	F	+ 6 mo.	+	+	9	1640	
IV	21	M	0	+	+	17	1000	Dental caries

4,200,000, W.B.C. 10,000; Van den Bergh—direct-negative; indirect-positive.

Icterus index 166.

The problem involved in this case as in all cases was one of diagnosis and not of treatment, as the latter is nil. The essential findings were:

1. Jaundice.
2. Temperature usually subnormal until prior to exitus.
3. Symptoms of toxicosis.
  - (a) Progressive prostration.
  - (b) Delirium.
  - (c) Coma.
4. Diminution in the size of liver in those cases not complicated by pregnancy, but in the latter about normal in size.
5. High icterus index.

To be considered besides acute yellow atrophy were:

1. Catarrhal jaundice. Ruled out because most of these cases run a low grade temperature associated with gastro-intestinal symptoms. Also the liver is enlarged and painful.
2. Weil's disease. This disease shows a different fever curve, pain in calf muscles, hemorrhagic symptoms as epistaxis and bleeding from gums, and also enlargement of the liver and spleen.
3. Phosphorus poisoning. Negative history. Liver would be enlarged and gastric symptoms would be suggestively severe in the earlier stages.

ress note written the day before exitus stated that the liver had decreased in size. Just before death on September 2 the temperature rose to 108°.

The essential findings at autopsy were:

1. Liver weighing 1,000 grams. The surface was mottled with yellow patches. It was slightly softer than normal. The cut surface showed some large yellowish areas alternating with purplish red patches. These yellowish patches were softer than normal tissue but some were fairly firm.
2. Teeth showed extreme dental caries.

Diagnosis: 1. Acute yellow atrophy. 2. Dental caries.

Summary:

1. Acute yellow atrophy is only a relatively rare disease.
2. Incidence is greater in females than in males, and greatest in the third decade of life.
3. Diminution in size of liver is not noticeable when the disease is associated with pregnancy.
4. The diagnosis is based on the cerebral symptoms of a progressive toxicosis associated with a high icterus index.

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#### PYRIDIDIUM

Pyrididium appears to have been originated by one Professor Ostromislenski, who came from Russia several years ago to give America the benefit of his researches. In a circular issued by Merck & Co., the preparation is said to be "a colloidal condensation product of Phenyl-Azo-Diamino-Pyridine Hydrochloride as prepared by Prof. Ostromislenski" and it is recommended in the treatment of "Genito-Urinary Infections, especially Gonorrhea." Apparently, the only evidence for the value of Pyrididium is contained in a book by Ostromislenski. Merck & Co. has not presented the product to the Council on Pharmacy and Chemistry for determination of its acceptability for New and Non-official Remedies. (Jour. A. M. A., November 19, 1927, p. 1803.)

The purpose of a case report in a scientific medical publication is instruction, not entertainment. The author's knowledge of scientific medicine is revealed far more by what he may leave out of such a document than by what he puts in. The case report should tell its story in clear, straightforward, narrative style. Unimportant observations which are without bearing on the clinical history of the case should be avoided. Negative observations are of value in few instances. The well-informed physician will not give the minutiae of examinations that demonstrate normality, nor will he provide an account of the various illnesses suffered by all the members on the patient's family tree, unless these have some bearing on the case that is reported.—Morris Fishbein, *A. M. A. Bulletin*, Nov., 1927.

## PROGRESS

Abstracts to be submitted to Section Supervisors.

Members are urged to abstract valuable articles which they run across in their reading and send the abstracts to the physicians in charge of the respective sections. In order to avoid duplication it would be well to communicate with one of the section supervisors before the article is abstracted.

## SURGERY

### SUPERVISORS:

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**GAUCHER'S DISEASE:** Harold E. Santee, M.D. (Ann. of Surg., 1927, LXXXVI, 707-714). About fifty cases of this disease have been reported since Gaucher's original description in 1882. It is a disease of unknown origin which involves the reticulo-endothelial system pathologically in such a way that on section of specimens from this system we find usually in the order named spleen, liver, bone marrow and lymph-nodes packed with the typical Gaucher cells practically to the point of replacement late in the disease.

Clinically we find progressive enlargement of the spleen and liver, anemia and subicteric tinting of the skin. Bone changes may apparently precede spleen and liver enlargement in some cases, and the presence of wedge-shaped yellowish thickenings in the conjunctivae are considered almost pathognomonic.

Etiologically this disease has not been definitely classified. Microscopically, the Gaucher cells present a typical appearance and the absence of lipoidal substance as well as the presence of the ccrebrosid kersasin apparently in the cell substance has been shown by Lieb and Epstein.

Splenectomy has been done in about thirty cases with an operative mortality about 20 per cent. Favorable results have been reported in sixteen cases; the average length of life is apparently prolonged.

The author reports two cases in brothers. He concludes that cure of a disease as diffuse as Gaucher's cannot be expected from the removal of a single involved element, such as the spleen. Relief of major symptoms, however, seems indicated, and on these grounds splenectomy seems to be justified although too few such cases have been recorded to warrant definite conclusions.

HAROLD E. SIMON, M.D.

**THE SURGICAL TREATMENT OF TUBERCULOUS GLANDS OF THE NECK:** Howard M. Clute, M.D. (Ann. of Surg., Vol. LXXXVI, pp. 666-682). One hundred and thirty-one cases of tuberculous glands of the neck, proved at operation, are reviewed in detail. The condition was found to exist in females more commonly than males, there being 93 females and 47 males in the series. Although commonly regarded as a disease of adolescence the condition was found at any age. Six patients were less than one year of age and three were between the ages of 61 and 65.

Regarding the location of glands, twelve cases had glands in either the right or left submaxillary triangle, each side being involved separately in six cases; 10 in the right posterior cervical region, and two in the left; 25 in the right anterior cervical region; 24 in the left; one case had glands limited to the submental region, one had a suprasternal node and one showed sub-clavicular glands. Nine cases had bilateral involvement, the location otherwise not being mentioned. The duration of the condition varied from three days to 45 years. Sixty-five patients had caseation or abscess formation. Twelve patients had a discharging sinus in their neck. Nineteen cases had previous oral infection, one case having the tonsils removed which proved pathologically to be tuberculous.

Innumerable types of previous treatment were tried. The chief symptom that brings the patient to the surgeon is the tumor mass. Pain and tenderness is rarely an outstanding complaint. Five common conditions must be differentiated clinically: (1) acute non-tuberculous adenitis; (2) Hodgkin's disease; (3) bronchial cyst; (4) goitre, and (5) malignancy. Two cases are reported of goiter with enlarged glands. One case proved to be goiter associated with early Hodgkin's disease and the second case goiter with tuberculous glands. The latter case was regarded as malignancy of the thyroid with enlarged cervical nodes.

The treatment of abscessed or exceedingly caseous tuberculous gland consists in making an incision over the abscessed gland, curetting out the granulation tissue and wiping out the cavity with full strength tincture of iodine. A small gauze pack is inserted in the wound. X-rays are a valuable therapeutic agent after this procedure. If a persistent sinus remains several months after operation, it should be carefully dissected and removed. A broken down gland will usually be present at the base of the sinus.

Radical excision of large masses of glands, involving a large area of the neck, is being treated surgically more conservatively than formerly. X-ray treatment for six months prior to surgery is carried out. The author believes that in definitely enlarged glands, which are well localized, and have been present in the neck for two months or over, in a patient who is five years or over, complete removal is the method of choice. Postoperative x-ray treatment is valuable but not used in abscessed cases, till they have been drained.

It is exceedingly important to avoid injury to the spinal accessory nerve or inframandibular branch of the facial, with resultant paralysis of the sternomastoid and trapezius and depressor anguli oris. Two cases in

which the spinal accessory nerve was cut at operation were sutured with perfect functional results two years after operation.

The operative mortality has been nil and the best end-results were seen in patients who came early for treatment: Surgery offers more to individuals who cannot afford the time and expense of prolonged hygienic treatment. Postoperatively all possible sources of infection should be eliminated combined with x-ray or radium in selected cases.

D. P. GREENLEE, M.D.

**TRAUMATIC RUPTURE OF THE NORMAL SPLEEN:** Hamilton Bailey, M.D. (*Brit. Jour. of Surg.*, Vol. XV, No. 57, p. 40). The paper is founded on 32 cases collected from the London Hospital records. Most of the cases naturally occur in males. There is always the history of severe trauma. Loss of consciousness very soon after the injury is a frequent occurrence. Vomiting is infrequent in uncomplicated cases.

Cases are divided into four groups: (1) The patient rapidly succumbs, never rallying from the initial shock. (2) Initial shock—recovery from shock—signs of ruptured spleen. (3) The signs of an intra-abdominal disaster are delayed and (4) spontaneous recovery occurs. In the first group were three cases, in this group usually the spleen is completely detached from its pedicle; only a small per cent of cases are fatal rapidly.

Most of the cases fall in the second group, having shock and signs of rupture. The general signs of rupture are those of intra-abdominal hemorrhage, which is frequently very hard to diagnose and signs are misleading. The local signs of ruptured spleen are therefore of prime importance:

1. Abdominal rigidity—variable, usually left upper abdomen.
2. Local tenderness is quite constant.
3. Shifting dullness in the flanks is a constant sign.
4. Abdominal distension usually commences three or four hours after injury.
5. Kehr's sign, referred pain in left shoulder, is frequently very prominent.

The mortality in the group with prompt operation (within twenty-four hours) is very low recently. From 1894 to 1914 there were 11 cases with only 3 recoveries, while from 1914 to 1925 there were 12 cases and 11 recoveries. The third group contains six cases where severe hemorrhage is delayed, due probably to one of three reasons: first, great omentum walls off the peritoneum at site of rupture; second, a bloody coagulum temporarily conceals the rent; and, third, a subcapsular hematoma forms which later ruptures. In these cases the pedicle is very friable and frequently slips so that it is wise to use a series of small ligatures on the pedicle rather than a mass ligature. The mortality in this group was 50 per cent.

Spontaneous recovery is probably so rare that all ruptured spleens should be considered surgical. The operation always performed now is splenectomy. The

author recommends the supraumbilical midline incision as having some advantages over the left paramedian incision usually employed. Transfusion is recommended as the ideal procedure immediately postoperative. The blood in the peritoneal cavity may be citrated and used for transfusion.

Early complications are: (1) Peritoneal effusion probably due to injury to pancreas, (2) burst abdomen requiring resuture, also due to pancreatic digestion of suture material, (3) left traumatic pleural effusion, (4) hiccoughs and (5) splenic asthenia.

Late complications are: (1) Attacks of palpitation when lying on left side occur occasionally, gradually wear off, (2) fleeting bone pains due to change in bone marrow occur frequently, (3) attacks of vomiting during first six months. There is no evidence to support the contention that splenectomized individuals are more susceptible to infections than other individuals.

P. G. FLOTHOW, M.D.

**DIVERTICULUM OF THE URINARY BLADDER:** Winfield S. Pugh (*Surg., Gynec. and Obst.*, 1927, XLV, pp. 629-636). Morgagni was the first to place diverticula on an anatomicopathological basis and to designate them diverticula. The very early writers designated them as supernumerary bladders.

True diverticula are covered by all the layers of the bladder; false diverticula are limited to the mucous membrane and are the more common of the two. The author believes that diverticula occur in from five to seven per cent of cases. They may be found at any age, but the greatest incidence is from 40 to 60 years.

Seventy to eighty per cent are located near the ureteral openings, although they may occur in any part of the bladder except the trigone.

The symptoms are not characteristic; the double voiding is the nearest to a typical symptom. Associated diverticulitis and peridiverticulitis are often responsible for the production of other symptoms. Bleeding is due to trauma, stone, tumor or tuberculosis and is not caused by the sac proper.

The diagnosis can usually be made by means of a careful cystoscopic examination and by cystography.

Treated surgically, the outlook is good. The prognosis of the non-retention type is better than that of the retention. When the diverticula become numerous, the possibilities of a cure are remote, although alleviation may be obtained. Medicinal treatment is of little value.

In many cases preliminary treatment similar to that for prostatectomy must be carried out. The principal methods of radical treatment at present are the intravesical removal of Young and the combined intravesical and extravesical technic of Lower. Since many of these cases present a definite urinary obstruction, this feature must receive appropriate treatment before the diverticulum is considered. Illustrative case histories are cited.

HAROLD E. SIMON, M.D.

# GYNECOLOGY AND OBSTETRICS

## SUPERVISORS:

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**STERILITY OF UTERINE ORIGIN:** Presented to the Congress of Gynecologists and Obstetricians of The French Language, September, 1927. Fernand Chatillon (Gynec. et Obstet., August, 1927). Referring to a similar report in 1911, he notes little positive advance in spite of many investigations and new ideas of treatment. The relative importance of this factor is difficult to determine. Certain uterine conditions may be relatively incompatible with impregnation or continuation of pregnancy. In a few instances suitable therapeutic procedures increase the possibility of pregnancy. These are comparatively rare and the prognosis in a given case must always be a guarded one. Uterine hypoplasia may be: (1) Fetal, arrested development in fetal life; (2) infantile, arrested development first few years; and (3) pubescent, arrest before puberty. The hypoplasia involves the body as compared to the cervix.

Fetal and Infantile.....	{ Body 1 Cervix 2
Pubescent.....	{ Body 1 Cervix 1
Adult.....	{ Body 2 Cervix 1

The hypoplasia also involves other structures which may be factors in the sterility. Hystero-radiography aids in the diagnosis. Treatment is of most value when begun early in life. Aside from glandular therapy mention is made of stimulating doses of x-ray to the ovary. The long narrow cervix may call for local treatment.

Stenosis of the cervix has been much exaggerated in importance and many doubt its significance except in connection with hypoplasia. Many forms of treatment are discussed. The author prefers slow dilatation with laminaria tents, retained for from 12 to 24 hours, and repeated in a few months if pregnancy does not ensue. Hegar's bougies give less permanent results. Several types of intra-uterine stem pessaries are discussed and are recommended under suitable supervision. Of the many plastic operations he prefers the Pozzi type with no interference with the internal os.

Though all forms of uterine displacement have been considered as causing sterility, none are incompatible unless complicated with pathology, usually inflammatory, of the endometrium or adnexa. Ante-flexion is usually associated with hypoplasia of the infantile type with the long narrow cervix to which treatment should be directed. Retroflexion of the uterus at least

decreases the possibility of pregnancy often because of complications or secondary effects. It should be corrected in sterile women. The round ligament operations are preferred. Uncomplicated prolapse is rarely a cause of sterility.

From 10 to 34 per cent of women with fibroids are sterile. Do fibroids cause sterility, or does sterility predispose to fibroids? In many cases there are secondary changes in the endometrium or adnexa. Radiography is of great value in the diagnosis and is safe. Myomectomy is the treatment of choice except for cases with a large number of tumors. There are many reports of full term pregnancy following myomectomy. X-ray treatment may increase the chances of successful pregnancy through controlling bleeding; but, if it is sufficient to reduce the size of fibroids, results in changes in the ovary with temporary amenorrhea and sterility. The same statements apply to results from radium.

Uterine trophy from infection, endocrine disturbance, or hyperinvolution, may respond to glandular therapy or stimulating doses of x-rays to the ovary. Pseudo-endometritis represents a non-inflammatory hyperplasia, or hypertrophy of the endometrium associated with changes in the ovary, and characterized by menorrhagia, sterility, or abortion. Diagnostic curettage is often indicated and may be curative. Stimulating doses of x-ray to the ovary often help. X-ray therapy to the spleen in order to influence the coagulation time is suggested in bleeding cases. Radium locally in small doses is used in suitable cases but the exact dosage is still indefinite. Endometritis rarely persists above the internal os, and in this connection, gonorrheal endocervicitis is most important. The author has little enthusiasm for local applications, silver nitrate, iodine, formaline, etc. He admits some success with diathermy and radium. He reports excellent results with the caustic paste of Filhos (potash, 2; chalk, 1 part). He also favors resection of the cervical mucosa as described by Faure and Douay in France, and by Sturm-dorf.

Uterine tuberculosis is usually associated with other localizations of the disease and the sterility is not improved by treatment.

**Conclusions:** Before treating the uterus for sterility, the husband should be examined for sterility and for evidence of gonorrhoea. One should make insufflation and hystero-graphic studies of the tubes. In many cases the uterine factor in sterility is associated with general conditions or has caused secondary changes in the adnexa. The most common causes of sterility are localized in the cervix. In a considerable number of selected cases suitable treatment is followed by satisfactory results.

ARCHIBALD L. McDONALD, M.D.

**STERILITY OF TUBAL ORIGIN:** Report to the French Congress of Obstetricians and Gynecologists. Eugene Douay (Gynecology et Obstetrique, August, 1927). Tubal insufflation and hystero-radiography have

given new ideas concerning tubal permeability and physiology. Normally there is regular peristaltic motion, active motility of the peripheral two-thirds of the tube, and a spasm, which may be relieved by antispasmodics, such as benzyl-benzoate. Preceding menstruation there is impermeability of tubes.

Impermeability is rarely congenital except in extensive anomalies. Pathologic obstruction may be due to (1) extrinsic tumors of the broad ligament or inflammatory adhesions, or (2) intrinsic stenosis usually inflammatory. Stenosis of the ampulla may be due to agglutination of the fimbria or dense adhesions with hydrosalpinx. The isthmus and intra-uterine portions are involved in bilateral nodular salpingitis with sterility. Tubal obstruction is the cause of more than 50% of sterility. Exact diagnosis is only possible by insufflation and hystero-radiography.

Various types of apparatus for insufflation are described in detail. In any method, one must avoid error by escape of air or gas at the cervix. The pressure is to be measured by a manometer, and not to exceed 200 mm. The procedure should be stopped in case of pain. A proper period after menstruation should be chosen, as premenstrual congestion or spasm may suggest impermeability. Infection from instrumentation and rupture of tube have occurred. Nitrous oxide offers some advantage as it is rapidly absorbed.

The signs of permeability are as follows: 1. Sudden fall in pressure from 150 to 60 mm. 2. Auscultation over the hypogastrium, often confusing. 3. Fluoroscopic evidence of pneumoperitoneum and decrease in liver dullness, requires from 60 to 150 mm. of gas. 4. Scapular pain, which is usually transitory and moderate, but is diagnostic.

Diagnostically, the insufflation method showed the following results: 1. In 42% of a large series, there was evidence that at least one tube was permeable. 2. There was partial permeability in 16% as evidenced by slow passage of gas. This indicated impairment of the physiologic permeability which may be improved by local treatment. 3. There was impermeability in 24% of the series, with no abnormal findings. 4. In 18% of the series the author succeeded in producing permeable tubes by the tests, subsequent pregnancies being reported in numerous cases.

X-ray diagnosis with the intra-uterine injection of opaque media is reviewed, and the author commends lipiodol, a 40% iodized vegetable oil. This oil is opaque to the x-ray even in minute amount, penetrates the smallest opening, is innocuous to the tissues, is slowly absorbed and is non-toxic, does not mix in the body secretions, and is antiseptic. It does not interfere with subsequent pregnancy. The apparatus used includes an occlusive cervical sound, a syringe, and a manometer to measure the pressure, which should not exceed 250 mm.

The treatment, depending upon the hystero-radiography, is done by one of the following elective operations. 1. Salpingolysis, division of constricting adhesions or removal of tumors. Insufflation during operation is a valuable check. The free end is best left mobile. 2. Salpingostomy will be necessary if the am-

pulla is closed. In such cases it may be necessary to fix the ovary in proximity to the opening. 3. Tubo-uterine implantation is done when the intra-mural portion of the tube is excised. The end of the tube is drawn through into the uterus and the opening closed. Provided the remainder of the tube is patent, results are satisfactory and subsequent pregnancy has been reported. 4. Ovaro-uterine implantation may be done with free grafts or with the intact ovarian pedicle into the cavity of the uterus. Ovarian function is maintained and pregnancy has been reported.

It is exceptional to operate primarily to relieve sterility, but in well selected cases, accurate work is possible and results are promising.

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## ROENTGENOLOGY

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MUST LOCAL OR GENERAL HARM BE FEARED BY USING IODIPIN (LIPIODOL) AS OPAQUE MEANS IN HYSTEROSALPINGOGRAPHY? Zimmerman and Nahmmacher (Fortschritte a. d. Geb. d. Roentgenstrahlen, Vol. XXXVI, p. 572, Sept., 1927). The fear has been expressed that the injection of suspensions of iodine in oil into the uterus and fallopian tubes might have some injurious effect. Clinical experience has indicated that the method is harmless. The authors conducted a series of experiments in which iodipin was injected into the peritoneal cavity of guinea pigs and rabbits without the slightest disturbance. Absorption, as demonstrated by roentgenograms, occurred very rapidly, as much as two cubic cm. being absorbed in four days. In fact, much smaller quantities than this usually reach the abdominal cavity in actual practice. The possibility of idiosyncrasy to iodides must be considered and in its presence bromine should be substituted.

L. G. RIGLER, M.D.

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AN INVESTIGATION INTO THE DEFECTS IN THE PYLORIC PART OF THE STOMACH: L. Arisz (Acta Radiologica Vol. VIII, p. 274, Oct. 1927). Roentgenologists are frequently puzzled by the presence of small defects in the pyloric third of the stomach, usually from one to two cm. proximal to the pylorus and most commonly on the lesser curvature. Occasionally they occur on the greater curvature. The author describes a number of cases of this type which were explored surgically and nothing found in the stomach of pathological significance. Many were associated with duodenal ulcers and ulcers higher up on the lesser curvature. If peristalsis passes through these areas without hindrance, if a distinct antrum is

formed, if no niche is visible, and there is no circular spasm of the stomach, the author believes these defects are due to folds of mucous membrane (Forssell). Benign tumors must be ruled out as peristalsis will pass through these without hindrance, but they tend to produce a larger, more central defect. Malignant tumors almost always produce a much larger defect and tend to change the peristalsis. Ulcers in this region produce changes in peristalsis, circular spasm, occasionally a niche, and shortening of the lesser curvature.

LEO G. RIGLER, M.D.

## EYE, EAR, NOSE AND THROAT

SUPERVISORS:

VIRGIL J. SCHWARTZ,

PHYS. & SURG. BLDG., MINNEAPOLIS

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**MALIGNANCY OF THE LARYNX AND ESOPHAGUS TREATED BY RADIUM EMANATION:** Frank Richard Herriman (Laryngoscope, 37: 4, September, 1927). When radium was first applied to malignancy of the larynx and esophagus, the methods were so crude and the results in practically all cases unsatisfactory, that it was very soon abandoned. Malignant lesions in these structures are so inaccessible and the tissues of which they are composed so quickly rendered radiosensitive that radium has now few advocates as a treatment for disease there located. In the author's clinic the use of radium has been discontinued for several years when he revived the therapy, using a new technic, however—the implantation of radium emanation in screened "seeds" directly into the affected tissues.

For laryngeal growths the technic consisted in exposure of the malignant area by direct laryngoscopy or the suspension method—the latter being preferable. For growths situated in the esophagus, a standard esophagoscope was brought into service. When adequate exposure had been obtained, the dimensions of the growth were carefully estimated, and the entire area of malignancy implanted at regularly spaced intervals with the removable platinum radon seeds designed by Joseph Muir of New York. The employment of suspension laryngoscopy makes the placing of radium in the larynx a comparatively simple matter, and with the esophagoscope and the aid of the fluoroscopic screen, it can be put in the esophagus with equal facility. The opponents of radium in the treatment of such malignancies have continued to cite the severe reactions and distressing sequelæ which follow the use of the crude applicators first employed for work in these peculiarly sensitive structures. When the implantation technic was first instituted in the larynx bare needles were employed, and the necrosis produced by these unscreened containers caused sloughing of the irradiated tissues, and, frequently, grave injury to the

adjacent healthy cartilage. In the esophagus the caustic rays were even more dangerous, for sloughing meant lung perforation with almost certainly fatal results.

The design of the seeds used by the author obviated practically all the difficulties encountered under the old methods. Implantation is by far the most accurate way of assuring even and adequate radiation throughout the neoplasm, and as soon as it became possible to implant a *screened* container, doing away with all danger of necrosis, the radioactive centers could be so placed that every section of the growth would be reached by the therapeutic rays, while all caustic action was eliminated. One of the most important features of these seeds is that they are removable, as this does away with the difficulties involved in permitting foreign bodies to remain in the tissues of the upper alimentary canal.

Details of eight cases selected from a larger series are given. All the patients were "hopeless" so far as surgery was concerned, at the time the implantations were undertaken. When this report was made at the New York Academy of Medicine, December 22, 1926, the patients were all alive, although the period which had elapsed since the treatment was begun was insufficient to permit the drawing of any conclusions as to the permanent relief which could be afforded.

The author feels that even if no more than temporary palliation has been secured, this, in itself, is well worth the effort required to apply the treatment, inasmuch as every patient had been doomed to die within a few weeks, when they first came under his care. Most of them had been able to return to their regular occupations, and even those who were still obliged to wear tracheotomy tubes were comfortable and pursuing their ordinary mode of life.

**FOREIGN BODY IMPACTED IN LOWER AIR AND FOOD PASSAGES:** Millard F. Arbuckle (Jour. Missouri State Med. Assn., Oct., 1927). The report of 51 cases is made in tabulated form. Three cases of outstanding interest are presented in detail.

The first case was that of a male, aged 34, who for 17 months had been troubled with dyspnea, productive cough, fever and loss of weight. Many physicians had seen him and had treated him for tuberculosis, lung abscess, chronic bronchitis, etc. He gave a history of a sharp attack of choking and coughing just before his symptoms started, while eating pork hash.

X-ray pictures showed a shadow at the right base. At bronchoscopy there were found numerous large granulations, much pus, and finally a foreign body. On removal, this latter was found to be part of the body of a vertebra which is attached to a pork chop.

A second case concerned a male aged 26, who gave a history that while having some dental work done, the dentist had accidentally dropped a broach (used in extracting nerves from root canals) in his mouth. It is important to note that there was no coughing nor other sensation of lung irritation at the time. X-ray examination showed the broach in the right main bronchus and its removal was followed by uneventful recovery.

A third case, a baby of 22 months, had dyspnea, cyanosis and fever. Twenty-four hours previously, while

cating a hickory nut, she had an attack of choking and had been wheezing since then. X-ray examination showed involvement of the right upper lung. At bronchoscopy three pieces of hickory nut were removed from the right main bronchus, which was lined with a deep red mucosa and was full of mucopurulent secretions. There was temporary improvement, but the next morning tracheotomy had to be done for dyspnea and cyanosis. Twenty-four hours later she died and at autopsy there were found a number of small pieces of nut in the secondary bronchus of the right lower lobe far out in the lung. There was also pneumonia.

The author concluded, among other things, that a careful physical x-ray and bronchoscopic examination is indispensable in all cases of unexplained cough, particularly those with a suggestive history.

VIRGIL J. SCHWARTZ, M.D.

## BOOK REVIEWS

Books listed here become the property of the Ramsey and Hennepin County Medical libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

**PHYSICAL DIAGNOSIS.** Richard C. Cabot, M.D., Prof. of Medicine, Harvard University. 9th Edition. 536 pages. Illus. Cloth, \$5.00. New York: Wm. Wood Co., 1927.

This valuable and well known book on physical diagnosis has been thoroughly revised and enlarged. The volume presents diagnostic methods and processes of equal value to the student and practitioner.

Dr. Cabot in his preface states that he has made no attempt to describe technical processes with which he has no personal familiarity and gives no space to the description of tests which he believes to be useless. By some this may be looked upon as a shortcoming, but one must admire Dr. Cabot's frankness and sincerity. At least one gets his ideas of the factors he considers important in diagnostic work. Dr. Cabot also very opportunely draws special attention to the false distinction between clinical diagnosis and laboratory diagnosis.

The subject matter in this book is brief and to the point and one is not obliged to wade through pages of mere words to glean the essential facts he seeks.

The chapters on cardiovascular disease have been amplified. Electrocardiography and sphygmography are only briefly described as Dr. Cabot feels that neither method is likely ever to be used by the practitioner for whom the book is primarily intended. The text on the normal and pathological variations of the heart sounds is marked with reference numbers which correspond to the Gamble-Cabot Cardiac Diagnostic records, a set of phonographic records taken with the collaboration of the Western Electric Company and the Columbia Phonograph Company. These records will be marketed this year and will be a boon to all teach-

ers of internal medicine and should be equally invaluable to the practitioner as well.

The chapters on clinical microscopy and urine analysis are brief but pointed.

The chapters on tuberculosis and blood have been rewritten.

The illustrations are profuse and there is an excellent index.

All in all the book is a delight to read and one can easily understand why it is so popular with both student and practitioner.

To those who have had the privilege of working with Dr. Cabot the book is doubly delightful, for his personality greets them at every turn.

HARRY OERTING, M.D.

**CERTAIN SAMARITANS.** Esther Pohl Lovejoy. 302 pages. \$3.50. New York: The MacMillan Company, 1927.

This is the thrilling story of the accomplishments of the American Women's Hospitals, an organization manned, supported and executed entirely by women physicians. It was established in 1917 as a result of the discrimination during the World War by the American Government against women physicians, for they decided that, although not called to the colors, they would go anyway. Well known and experienced medical women donated their services, collected funds and founded this organization, which is now well known and which has meant so much to foreign people who have been innocent sufferers for the policies of their respective governments. The American Women's Hospital No. 1 was opened in France in 1918 in buildings furnished by the French Government with the understanding that it be available for both civil and military cases. This was manned and financed entirely by women and was moved about from place to place wherever the need was great. As soon as possible other hospitals and dispensaries were opened and the great work was established. Before the armistice was signed it was carried into the Balkans in coöperation with the Red Cross, in a hospital in a Turkish schoolhouse. One of the numerous patients was a Serbian pope of the Orthodox Church, who suffered from appendicitis for many days before he would allow a woman to operate upon him but who, when much to his surprise he recovered, was a very grateful patient.

As time went on the work became more varied and included the establishment of hospitals, dispensaries and training schools for native nurses, classes in infant welfare work and district nursing in coöperation with native physicians, sanitation work and constant warfare on the many insects of the country. The Serbian government coöperated in every possible way, even furnishing a pope for the consolation of the patient and a cemetery for the burial of the dead. Armenian and Syrian relief work was organized under the Near East Relief Committee in 1919. The governments furnished the buildings, the Near East Relief Committee the repair service, equipment and supplies, while the American Hospitals provided the personnel, paying the

aries of all persons, native or American, who were connected with the health work.

In 1922 the burning of Smyrna and the forced exodus of all Christians from Turkey created another emergency to which the American Women's Hospitals promptly responded, their director arriving while the flames were still rising from the city. At this time 10,000 people were driven from the city to the quay where they were forced to wait for days while Greece decided to send boats for them and the other countries maintained strict neutrality. Finally, as there seemed to be no end to refugees, and disease and pestilence came so severe among them, Greece, in self protection, was forced to close her ports to them, and many thousands of disease-ridden, starving people had no chance to land. With the help of the Red Cross and the Near East Relief Committees the American Women's Hospitals established quarantine stations for them on the bare, rocky islands off the coast of Greece, under the direction of Dr. Olga Stasney. This accomplishment marked the climax of the work, as well as of the book, and is admirably told, furnishing vivid pictures of life in poverty and suffering, both mental and physical, which would otherwise be impossible to visualize. Following this the American Women's Hospitals conducted relief work in Russia and Turkey and will continue to function wherever the need is great.

This book will be of interest to physicians, to those who watch with interest the accomplishments of women and those who are interested in carrying charity to suffering humanity at the far ends of the world. It should be widely read and many readers will be glad to know that the purchase price of every copy goes to help carry on the work of the organization.

Whether or not one approves of the American Women's Hospitals, the National Medical Women's Association, or of women physicians in general, one must admire and appreciate the courage, fortitude, efficiency and humanity of these women who, in the words of the author, "have lived abundantly and stored up riches within themselves upon which they may draw as the years go by. They can never be poor although they lie in the almshouse—the place would be enriched by them."

MARGARET WARWICK, M.D.

**DISORDERS OF THE NOSE, THROAT AND EAR.** Aaron Roth, M.D., F.A.C.S. 238 pages. Illus. Cloth, \$2.50. Brooklyn: Physicians and Surgeons Book Co., 1927.

This small volume, written in very simple language, will be of interest to any interne, nurse or layman for collateral reading. It is in no sense a text book and might have more illustrations with profit. The last chapters on the problems, management and prevention of deafness are particularly interesting. By a mistake of printers the first sixteen pages of text have been omitted.

The book provides an evening's entertainment.

K. C. WOLD, M.D.

## MANUAL OF THE DISEASES OF THE EYE.

Charles H. May, M.D. 12th edition revised. Illus. 445 pages. Cloth, \$4.00. New York: Wm. Wood and Co., 1927.

In presenting a book of this kind which, as the author states, is only for the student and general practitioner the question will always arise, What should be included in such a text and what should be omitted?

The beautifully colored plates as well as the numerous illustrations certainly fulfill the object of being a manual of eye diseases for general use. One wonders, however, if such a book might not tend to make a man treat certain conditions of the eye in which he is not by experience or knowledge qualified.

As a student, the reviewer remembers that May's was always considered the best student text book on the market.

A description of the rarer diseases as well as minute technic of certain operations might have been omitted without harming the general usefulness of the book. Colored Plate No. 2 is rather too diagrammatic and the different stages of cataract might be substituted with benefit.

In a résumé of therapeutic agents the most noticeable omissions are (1) mercurochrome, (2) foreign protein therapy, (3) ultra violet radiation and diathermy.

Everything considered, it is a wonderfully compact, well written and well illustrated book which should be in the hands of every student and general practitioner.

K. C. WOLD, M.D.

## DIATHERMY WITH SPECIAL REFERENCE TO

PNEUMONIA. Harry Eaton Stewart, M.D., Formerly Attending Specialist in Physiotherapy, U. S. Marine Hospital, New York; Author of "Physiotherapy, Theory and Clinical Application," and "Physical Reconstruction and Orthopedics." 12 mo., cloth; 220 pages, 45 illustrations, 15 charts. Price, \$3.00 net. Paul B. Hoeber, Inc., New York City, 1926.

Stewart's Diathermy and its Application to Pneumonia is another work from an excellent man in the field of physiotherapy.

The book, consisting of 204 pages, has a rather misleading title in one respect, inasmuch as more than half of it is devoted to a discussion of apparatus and diathermy technic. There is also a chapter on surgical diathermy which seems out of place in a work of this title. All of this material can be found in the general text books on the subject, one of which is Stewart's Physiotherapy and Principles of Application.

The last 84 pages of the book are a well presented group of detailed case histories in different types of pneumonia, treated by diathermy, as well as a presentation of controls.

The symptomatic improvement of the treated cases and the lower mortality rate, 19.4% compared to 42.9% in the controls, is impressive. However, the relatively small group treated causes one to be cautious in appraising the final conclusions.

WM. P. SADLER, M.D.

**TIGER TRAILS IN SOUTHERN ASIA.** Richard L. Sutton, M.D., Sc.D., LL.D., F.R.S. 115 Illustrations. Pages 207. Price \$2.25. St. Louis: C. V. Mosby Co., 1926.

Dr. Sutton's *Tiger Trails of Southern Asia* is not all tigers. Nothing in jungle life is left out of his story. He tells of things that crawl and those that fly, he describes game animals from the small mouse deer to the elephant. He gives an interesting and instructive description of the native tribes of Indo-China and India, their character, religion and habits.

One is told how to equip for a big game hunt, how to get to the hunting grounds and how to do the job when the hunt is on, and further, which seems quite important, he gives advice as to the way of getting on with the natives.

The adventures, modestly told, are full of interest and thrills. They are apt to stimulate a desire in the young to do some of the things the author has done and perhaps leave the old with the thought that they have missed something very much worth while.

The many pictures in the volume help tell the story and the vein of humor running through is refreshing. The book may be read with both pleasure and profit.

H. C. JOHNSON, M.D.

**NASAL NEUROLOGY, HEADACHES AND EYE DISORDERS.** Greenfield Sluder, M.D., F.A.C.S., Clinical Professor and Director of the Department of Oto-Laryngology, Washington University School of Medicine, St. Louis. 428 pages. Illus. Price \$11.50. St. Louis: C. V. Mosby Company, 1927.

This monograph represents the author's conclusions and observations since the publication of his first book in 1928 on *Headaches and Eye Disorders of Nasal Origin*. In the main, Sluder maintains his original beliefs. That vacuum headaches are always due to the anatomical structure of the frontal sinus, he doubts, basing his conclusion on the study of 580 cases. His descriptions of nasal neuralgia and hyperplastic sphenoiditis are classical.

He also includes in this book a description of his ethmoid and sphenoid operations. This is a well known procedure but not one followed by the majority of rhinologists in this section of the country. A new operation on the antrum is also included.

This book should be read by all rhinologists, not alone for its educational value but for the stimulation to do scientific work.

KENNETH A. PHELPS, M.D.

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# MINNESOTA MEDICINE

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## FRACTURES ABOUT THE ANKLE JOINT INVOLVING THE TIBIA AND FIBULA\*

JAMES MORLEY HITZROT, M.D.

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**F**RACTURES of the tibia and fibula which involve the ankle joint are as yet somewhat unsettled in the mind of the ordinary surgeon because they have been confused by the terms Pott's fracture, Dupuytren's fracture and other names applied to fractures in this region which are not sufficiently inclusive and which do not describe or include the great variety of lesions found in clinical experience, especially since the x-ray has added to our knowledge of the types of bone injury.

Ashhurst very aptly states that "Pott described a fracture that does not exist." Maisonneuve, Tillaux, Honigschmied, and Stimson studied lesions by experiments upon the cadaver, arriving at conclusions which were at variance with one another. Ashhurst puts the matter very concisely when he says that "the study of the mechanism of these fractures by experiments upon the cadaver has many limitations, as it is impossible, in the cadaver, to reproduce the mechanism which occurs in the living patient."

Cooper classified the fractures in this region as dislocations of the tibia on the ankle and considered the fractures as incidental to the dislocation rather than the cause of it.

Maisonneuve drew attention to the importance of the inferior tibio-fibular ligaments in fracture about the ankle and drew attention to the common mechanism, namely, external rotation which produces one of most frequent lesions, namely, the mixed oblique fracture of the fibula.

Destot studied the lesions by means of the x-ray and was the first writer to classify the fractures from a study of the bone lesion by the x-ray.

Destot made a classification based upon the function of the component bones: (1) fractures of the tibial plateau, which affect the supporting mechanism and disturb weight bearing; and (2) fractures of the malleoli, which distort the ankle mortise and interfere with the equilibrium of the foot.

Ashhurst's comprehensive contribution reviews the communication of the previous writers on this subject and offers a classification of the fractures which is based upon a definite anatomical and mechanical basis (*vide infra*).

*Etiology.*—Fractures of the tibia and fibula involving the ankle joint are produced by indirect violence in the vast majority of cases. Fractures by external rotation of the foot occur in 61 per cent, by abduction of the foot in 21 per cent, by adduction in 13.3 per cent, by compression in the long axis of the leg in 2.7 per cent, while only 1.7 per cent are the result of direct violence.

*Mechanism.*—The mechanism which produces a fracture involving the tibio-fibular mortise is the result of abnormal movements at the ankle joint, that is, movements in external rotation, abduction and adduction, while a small number are the result of exaggerated movements in the normal range of flexion and extension, or as a result of compression in the long axis of the bone, or by direct crushing accidents. In the living, the mechanism producing a fracture at the ankle is rarely a single force, but is more often the summation of a variety of forces which may act singly at different times or may all act together at the same time. For example, in an accident the foot may be abducted and then rotated externally, or both may occur simultaneously. This variance in the time and

\*Read before the Great Northern Railway Surgeons Association June 24, 1927.

variety of the component forces, together with the variations in the degree of the violence exerted, produces a distinct difference in the character of the bone lesions which result from the same mechanism and a variation in the amount and direction of the displacements.

The normal movements of the ankle joint are those of flexion (dorsiflexion) of 20 degrees and extension (plantar flexion) of 60 degrees. Normal motion in abduction and adduction in the foot occurs beneath the astragalus between the astragalus and the calcaneum. Movements of inward rotation of the foot occur with adduction, the movement taking place in the anterior tarsal joints (Maisonneuve).

External rotation of the foot is resisted by the tibio-fibular mortise, the foot being converted into a rigid lever (Maisonneuve), and the strain becomes greatest upon the external malleolus from two forces: a push out and against the anterior border by the astragalus and a pull inward on the posterior border by the strong posterior band of the external lateral ligament (Honigschmied), producing a fracture by torsion. The line of this fracture runs obliquely from above and behind downward and forward, involves the inferior tibio-fibular joint and extends low down on the fibula, sometimes to its tip (Ashhurst). There is little or no displacement and no separation of the tibio-fibular mortise. If this external rotation continues after the fibula breaks, either the internal lateral ligament tears or the tip of the internal malleolus pulls off. The displacement in this variety may be slight or marked.

The posterior margin of the tibia is broken very frequently—in addition to the above two bone lesions—by crushing force from below upward (Ashhurst) with the foot in plantar flexion (Lucas Championniere).

Abduction of the foot occurs in the astragalocalcaneal joints. Movements in abduction beyond the normal are resisted by the strong ligaments which bind these bones together and the force is transmitted through the astragalus to the tibio-fibular mortise. In forced movements beyond the normal, the greatest strain comes on the internal lateral ligament, which fractures the internal malleolus or the ligament tears (Bonnet). If the abduction continues, a crushing fracture of the external malleolus below the inferior tibio-fibular joint occurs. The inferior

tibio-fibular ligaments influence the resulting lesions when forced abduction of the foot occurs. If they hold, the external malleolus breaks below the tibio-fibular joint (rare). If they tear, the fibula breaks above the tibio-fibular ligaments through the narrow part of the fibula and diastasis of the tibio-fibular mortise occurs and the foot drops out and back (the ordinary type described as Pott's fracture or the Dupuytren fracture of the French).

If external rotation of the foot occurs with abduction, the fracture of the fibula is of the oblique type described above and the inferior tibio-fibular ligaments are as a rule untornd. If they tear, the fracture which occurs is a fracture high up in the fibula (the so-called Maisonneuve fracture).

The attachment of the inferior tibio-fibular ligaments to the tibia may be torn off instead of the ligaments tearing, producing the intermediate fracture of Tillaux first described by Cooper. In this group of abduction fractures Ashhurst also places those fractures through the whole lower surface of the tibia with a bending fracture of the fibula similar to that described above when the tibio-fibular ligaments tear.

In fractures from adduction the sole of the foot is inverted and the entire foot adducted beyond the normal range of motion possible in the tarsal joints. The strain is thrown on the external lateral ligament, which tears or pulls off the tip of the external malleolus, or the malleolus breaks transversely. These may be accompanied by a compression fracture of the internal malleolus or the after-coming weight of the body may split the tibia upward by forcing it against the astragalus.

Tillaux produced a supramalleolar fracture of the tibia through its lower third with a fracture of the fibula below the tibio-fibular ligament by adduction.

The displacements to be noted are those which cause a disturbance of the weight-bearing axis of the ankle joint with disturbance of the tibio-fibular mortise and a disturbance in the position of the astragalus in its relation to the tibio-fibular mortise.

*Classification.*—No satisfactory classification of the fractures about the ankle joint exists. In fact the varieties of the lesion are so numerous that it is difficult to place certain fractures in any definite category. Ashhurst believes that an im-

perfect classification based upon the mechanism which produces the fracture is essentially easier to understand and remember than the more elaborate classification of Tanton. Certainly it is necessary to understand the mechanism which brought about the fracture to properly correct the existent displacements and to bring the foot into the proper weight-bearing axis with the tibia.

#### ASHHURST'S CLASSIFICATION

##### A. Fractures by External Rotation:

1. First degree: Lower end of fibula only (mixed oblique).
2. Second degree: Same, plus rupture of internal lateral ligament or fracture of the internal malleolus (low Dupuytren), viz.,
  - (a) Internal lateral ligament uncomplicated.  
Internal lateral ligament complicated by posterior marginal fragment of tibia.
  - (b) Internal malleolus, uncomplicated.  
Internal malleolus complicated by posterior marginal fragment of tibia.
3. Third degree: Same, plus fracture of whole lower end of tibia, representing the internal malleolus.

##### B. Fractures by Abduction (Fibular Flexion):

1. First degree: Internal malleolus only.
2. Second degree: Same, plus fracture of fibula (transverse above or below tibio-fibular joint).
  - (a) Below inferior tibio-fibular joint (no diastasis) (bimalleolar fracture).
  - (b) Above inferior tibio-fibular joint (with diastasis) (Pott's fracture, Dupuytren type).
3. Third degree: Internal malleolus represented by whole lower end of tibia.

##### C. Fractures by Adduction (Tibial Flexion).

1. First degree: External malleolus only, transverse at or below level of tibial plafond.
2. Second degree: Same, plus—
  - (a) Internal malleolus below level of tibial plafond (bimalleolar fracture).
  - (b) Median surface of tibia up and in from joint surface.
3. Third degree: Same, plus whole lower end of tibia (supramalleolar fracture by adduction).

##### D. Fractures by Compression in Long Axis of Leg:

1. Isolated marginal fractures.
2. Comminution of tibial plafond.
3. T or Y fractures (V fractures of Gosselin).

##### E. Fractures by Direct Violence (Supramalleolar Types).

*Epiphyseal Separations.*—Epiphyseal separations while not common are not rare. The epiphysis of the fibula, of the tibia, or both, may be separated by the same mechanism which produces fractures in the adult. The elasticity of the joint in the young child permits forced movements much wider in range than in the adult, but disturbance at the epiphyseal lines occurs quite frequently and it is apt to be the cause of the so-called sprained ankle in the growing child. The treatment is essentially that of the adult, except that complete reduction, especially of the tibial epiphysis, is desirable. I have seen one case of early ossification of this epiphysis in a boy of fourteen with corresponding change in the length of the tibia and interference with the ankle joint. The fibula grew and a varus position of the foot interfered with walking.

*Symptoms.*—The symptoms of an ankle fracture depend upon the factors spoken of in the discussion above. Pain, disability, deformity, etc., vary extensively.

Clinically we may recognize:

1. The possible fractures, *i.e.*, those in which the injury involves the region of the ligamentous attachments about the ankle mortise. It may be difficult to determine whether a fracture exists, since swelling, ecchymosis and localized tenderness are as marked in the ligamentous injuries as in the fractures with no displacement. Careful examination of the bone will usually reveal an area of linear tenderness over one or the other of the malleoli.

2. The undoubted fractures with lateral mobility in the ankle joint, shifting of the foot into the valgus or varus position, displacements of the foot posteriorly or otherwise which indicate the varying types of fractures.

*X-Ray.*—The recognition of all the lesions existent in the given case must be made by a proper x-ray examination, but careful physical examination should reveal the principal bone lesion. If possible, an x-ray examination is desirable. If too much delay must occur before the x-ray can

be taken, I prefer to proceed without it, as the earlier any displacement is corrected the less the reaction and I prefer to reduce these fractures within the first two hours after the injury.

After the reduction an x-ray is essential to ascertain the character of that reduction. If the weight-bearing axis and relation of the ankle mortise are not satisfactory, the manipulation, under an anesthetic preferably, should be repeated. Gas and oxygen may suffice for first reductions but secondary manipulations should be done with complete relaxation under ether, and ether should be used in either case if satisfactory relaxation is not possible otherwise.

*Treatment.*—The aim of all treatment of ankle fractures should be to restore the normal weight-bearing axis between the tibial plateau and the astragalus and to restore the normal relation of the astragalus and the tibio-fibular mortise.

1. The common fracture, that is, the fracture by external rotation, with little or no displacement of the foot, requires a support with the foot straight (horizontal) and the sole slightly inverted. Two moulded plaster splints, one posterior and one interolateral, serve admirably and may be applied immediately and the foot elevated and an ice bag placed over the ankle joint for twelve to eighteen hours. Massage should be begun early (first to third day), and active motion and baking with dry heat at the end of the first week. The plaster splints should be worn from two to four weeks and weight bearing prohibited for two weeks after removal of the splint. In extreme cases a short caliper splint with a foot plate may be required when weight bearing is begun and the patient advised to avoid external rotation, that is, cautioned to walk with the toes turned in, "pigeon-toed" if you will.

2. In the cases by rotation with the varying degrees of displacement above described the displacement should be corrected by manipulation under an anesthetic and the normal weight-bearing axis and the normal relations of the ankle mortise restored. Care should be taken to correct all posterior displacements. Once the displacements have been corrected the leg should be splinted from above the knee to the toes in two moulded plaster splints with the foot in slight dorsiflexion, adducted, the sole inverted, the foot elevated and an ice bag used as above.

The after-treatment, such as massage, motion, etc., should be begun as early as the individual

case will permit without the danger of producing displacement, which is usually possible about the end of the first week. The plaster splint should be worn for from four to six weeks and weight bearing prohibited for two weeks longer. A caliper splint with a foot plate, or a high shoe with a Thomas heel and the inner edge of the sole raised for one-quarter to three-eighths of an inch (especially the latter), is advisable for a number of months after the removal of the splint.

In the cases in which abduction has entered, the same remarks apply as those in the second paragraph above, with this exception, that the foot should be drawn forward, strongly *adducted* and the sole *inverted* as far as possible.

In the cases by adduction, especially when the internal malleolus is broken, adduction of the foot is to be avoided in the reduction. Displacements should be corrected under an anesthetic if necessary and the foot placed in the straight position in slight abduction, *i.e.*, abduction sufficient to restore the tibio-fibular mortise, and the leg put up in moulded plaster splints, posterior and externolateral, for from four to six weeks. Massage and motion should be begun in from three to seven days, depending upon the injury, with baking, etc. Weight bearing should be delayed for two weeks after removal of the splints and in the severe injuries a short caliper splint and foot plate are advisable.

In all cases the patients may be allowed up on crutches as soon as the inflammatory reaction has subsided, usually the third to the tenth day. Swelling in the foot can be met by elevation of the leg during the resting intervals and rarely requires elevation in the recumbent position. That swelling will occur if up and about should be explained to the patient and the patient advised to sit and to lie with the leg above the level of the hips in a comfortable position when not walking about.

*Prognosis.*—The prognosis varies according to the character of the injury, the age of the patient and the restoration of the ankle mortise. Severe injuries with marked dorsal displacements will have some limitation in motion, especially in dorsal flexion at the ankle, and in individuals over thirty-five some pain after use occurs in about 25 per cent of the cases, which becomes more marked as the age incidence increases.

Uncorrected or partially corrected cases with valgus deformities suffer from numerous disabilities such as flat foot, pain in the foot and leg on walking, pain in the knee and hip.

Cases with varus deformities suffer chiefly from ankle disabilities.

In general, the more nearly normal the ankle restoration, the earlier the reduction, and the more carefully the after-treatment applicable to the given case is carried out, the better the prognosis.

In rare cases, especially in women with arthritic symptoms, permanent pain and swelling in the ankle joint and in the tarsal joints with pain on use will persist.

Cases with incipient tabes will suffer from marked disintegration of the tarsal bones with the corresponding deformity. (It is well to look for signs of tabes in all adults who receive fractures from slight injuries.)

*Treatment of Old Uncorrected Cases.*—Up to four weeks after injury, cases with valgus deformities may be corrected by manipulation with the Thomas wrench, first, by exaggeration of the deformity and then by rocking the foot back and forth until it can be carried into forced adduction with the foot in slight dorsiflexion.

Posterior displacements of the foot are more difficult to correct, especially if the tendo achillis is contracted. Tentotomy or tendon lengthening and manipulation with the wrench may reduce these cases.

In the cases seen later and in the above varieties in which the relation of the ankle mortise cannot be restored, correction by open operation is indicated. The operation is difficult and should not be resorted to in cases with mild disabilities which can be alleviated by a shoe with a raised sole and a Thomas heel or in individuals not essentially good surgical risks.

Supramalleolar osteotomy is a delusion as it cannot correct the posterior displacement.

The method most satisfactory is that advocated by Stimson, which reproduces the fracture, removes the new bone on the tibia and restores the joint axis. Two incisions are required. One incision exposes the fracture in the fibula by an incision from above the line of fracture curving downward and forward in front of the external malleolus. The fracture of the fibula is then reproduced by an osteotomy. The second incision is made on the tibial side and curves downward

and forward in front of the internal malleolus well forward onto the foot. The internal malleolus is freed and the ankle liberated and the tibial plateau projected into the wound and all new bone projecting into the mortise which will interfere with the correct adjustment removed. The tibia is then replaced and the ankle brought into correct position and the wounds closed without drainage and put up in a moulded plaster as for the recent injuries of a similar type. The after-treatment, especially as to massage, baking, etc., should be begun at about the end of the second week and the splint worn for six weeks. The short caliper and shoe as advised above are essential and I prefer to delay weight bearing until all signs of pain on graduated weight bearing with crutches has disappeared.

Stimson reports ten cases so treated with satisfactory results. I have done six cases, one with an excellent result, four with great improvement and one with little improvement in ankle joint motions but with the disappearance of pain after use.

In old cases of adduction fractures with a varus deformity the fracture should be exposed by two similar incisions and the displacement corrected after liberating the malleoli and the foot put up in slight abduction and treated as above, except that no raise to the inner edge of the shoe should be used.

Cases with equinus deformity should be treated by tenotomy (Robert Jones) or by lengthening the tendo achillis.

Dowd lengthened the tendo achillis in two cases with a large fragment split off the posterior surface of the tibia in which he failed to maintain reduction by the ordinary methods even with the knee flexed, and calls attention to the value of this method for the type to which it is applicable.

*Compound Fractures.*—Compound fractures at the ankle are mean injuries and are particularly prone to infection. Once infection occurs, drainage is difficult and the extension of the infection up the leg between the muscle planes and in the tendon sheaths makes amputation the only satisfactory cure. A properly fitted artificial leg is more satisfactory than the resultant disabled foot from this infection and exposes the patient to less risk.

A compound fracture of the tibia and fibula at the ankle should be treated as a surgical emer-

gency and operated upon at once. The tibia usually has projected from a tear on the inner aspect of the ankle. This wound should be excised, after the proper preparation, by sharp dissection. The fractured area should then be exposed by a long incision on the tibial side of the leg curving forward onto the foot and the tibia dislocated into the wound and its surface irrigated with hot saline solution. Hot saline irrigation of the joint should then be done and the blood clots expressed. A counter opening is then made behind the external malleolus and the tibia replaced and the fracture corrected. The operative wound is then closed by loose suture (without tension) about a rubber dam drain placed anterior to, but not into, the ankle joint, at the point most suitable for drainage. Through the counter opening on the fibular side a rubber dam drain is placed posterior to, but not into, the joint, and the foot put up in moulded plaster splints over an appropriate dressing. This may suffice and no infection occur. If infection occurs astragalectomy to provide free drainage is, in my experience, the easiest procedure. It should be done as soon as it is evident that the first procedure has not been sufficient. In badly soiled

cases, especially when infection seems inevitable, it is probably safer to do an astragalectomy at once and treat by the Carrel-Dakin method from the start.

After astragalectomy in either case as soon as possible, but only after the infection is controlled, the foot should be displaced backward and put in partial plantar flexion as advised by Whitman in astragalectomy in paralytic cases as this gives a better weight-bearing foot than if it is left otherwise.

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#### MONAHATO ANOTHER LEAD AND SULPHUR HAIR DYE

"Monahato" is put on the market by the Moulton Products Co., Lombard, Ill. It is described as the "original, natural hair tonic." Contrary to the claims on the package, Monahato is *not* a "natural hair tonic"; it is not "a genuine herb compound," and it *does* "rely upon harmful chemicals" for the property it has of dyeing the hair. Although the carton declares, by inference, that Monahato contains no lead salts or sulphur, analysis of the preparation in the A. M. A. Chemical Laboratory disclosed the fact that it contains both. In other words, Monahato is essentially a hair dye of the lead-salts and sulphur type. (Jour. A. M. R., December 10, 1927, p. 3059.)

#### MIRACLE PYORRHEA POWDER

"Let us save your teeth! We can do it! No matter how soft or how spongy and bleeding the gums may be, or the teeth so loose it seems you could pick them out with the fingers, the Miraele Pyorrhoea Powder will make them hard and firm again." These were some of the claims made by the Miraele Remedy Co. of Detroit for its product "Miraele Pyorrhoea Powder." Analysis seems to show that the preparation is essentially a mixture of baking soda and borax, or possibly boric acid, to which has been added a very small amount of aromatic oil. Some miraele! (Jour. A. M. A., December 10, 1927, p. 2059.)

## ACHYLIA AND THE EFFECTS OF HISTAMINE\*

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*Minneapolis*

IN 1924, I studied 250 children between the ages of six and fourteen and found four cases of achylia. Two of these cases were examined a year later and in one of them there was no free hydrochloric acid and in the other only a slight amount. The other two were not re-examined.

Ryle and Bennet, studying a series of 100 medical students, found four with no free hydrochloric acid. It is probable that achylia is not common in the first two decades of life. On the other hand, Sidelin in Copenhagen found absence or greatly diminished secretion in 40 per cent of the working class above the age of fifty. Dedichen in Oslo examined ninety-nine healthy persons between the ages of sixty-seven and ninety-two and found anacidity in sixty-six and subacidity in seventeen. Series such as these would indicate that achylia becomes frequent toward middle life.

The method of examination might also have some bearing on its frequency. For example: Rehfus found by fractional analysis that a certain percentage of cases which showed no acid in a single sample taken 45 minutes to one hour would show free hydrochloric acid in varying amounts at other times during digestion. Hurst found this to be true in approximately 6 per cent of 662 cases.

Beard, Campbell and Hern, by the estimation of the total chloride, came to the conclusion that a small percentage of cases in which no acid could be found by the ordinary fractional meal showed a markedly increased amount of chloride. They attributed this rise in chloride to the neutralization of the hydrochloric acid by carbonates from the pancreas regurgitated through an abnormally patent pylorus. This would happen of course after gastroenterostomy. In a few cases, however, according to these observers, neutralization could only be explained by an excessive secretion of alkaline mucus from the antrum.

Lim, Mathieson and Schlapp found that 3 mgms. of ergamine phosphate would give a maximum secretion of free hydrochloric acid in about 20 minutes in the normal stomach. Doctors

Berglund, Wahlquist and Sherwood, working at the University Hospital, obtained acid values up to .5 per cent in the fasting stomach in normal patients. This is what Boldyreff and Carlson had found in the pure gastric secretion of dogs.

Eighteen cases of achylia were examined both by the injection of histamine and also the estimation of total chloride. These cases were seen in routine office practice. The method of procedure was as follows:

The patients were given a fractional meal in the morning and aspirated every 15 minutes through a Rehfus tube. These samples were tested for free hydrochloric acid by Gunzberg's reagent. This is important, as emphasized by McLain, because, if Topfer's reagent alone is used, one may get a weakly positive test for free hydrochloric acid which is caused by an excess of organic acids. After one hour the stomach was washed until we obtained a clear return, about 500 c.c. of water being used. Then 1.5 mgms. of ergamine phosphate was injected subcutaneously and the gastric secretion aspirated every 15 minutes for four aspirations. Tests for total acidity were made and the total chloride was estimated. The samples were also tested as before for free hydrochloric acid by Gunzberg's method, and if any acid was present it was quantitatively determined by Topfer's reagent, and also for total acidity and for total chloride by the method of Van Slyke.

Ergamine phosphate (Burroughs Wellcome Co.) very soon after its injection produced a profuse flushing of the skin and a slight injection of the conjunctiva. There is a profuse flow of saliva and a drop of both systolic and diastolic blood pressures of from 15 to 20 minutes. The maximum effect is noted in about 20 to 30 minutes, and it is at this time that the maximum secretion of free hydrochloric acid takes place if there is any response.

Eighteen cases were examined in all. None of these cases showed any free hydrochloric acid by fractional examination. In five of the cases, however, there was a definite secretion of acid following the injection of the histamine (Figs. 1 and 2). In the remaining 13 cases there was

\*Presented before the Minnesota Academy of Medicine, Jan. 11, 1928.

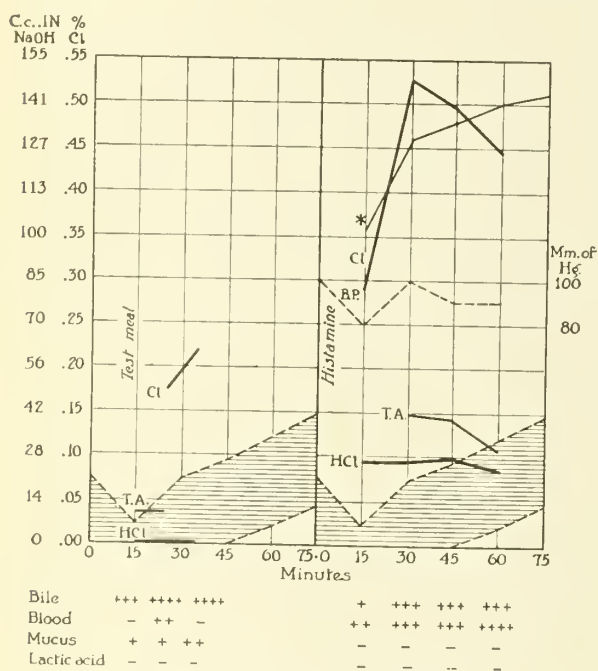
no free hydrochloric acid. In only two of the five cases showing free hydrochloric acid after histamine did the acid reach a normal limit. One of these was the case of gastroenterostomy with free hydrochloric acid of 27. The other was a case of secondary anemia in which the free hydrochloric acid was 28. The response in the other three cases was small in amount: from 9 to 14. The fact that one can get free hydrochloric acid in some achylia cases by the injection of histamine is of interest.

When we attempt to interpret the chloride curves in these cases, however, we are in trouble. The five cases in which we found free hydrochloric acid showed a uniform rise of chloride

the ordinary fractional meal and only partially neutralized after histamine, the neutralizing carbonates coming from the pancreatic secretion by regurgitation.

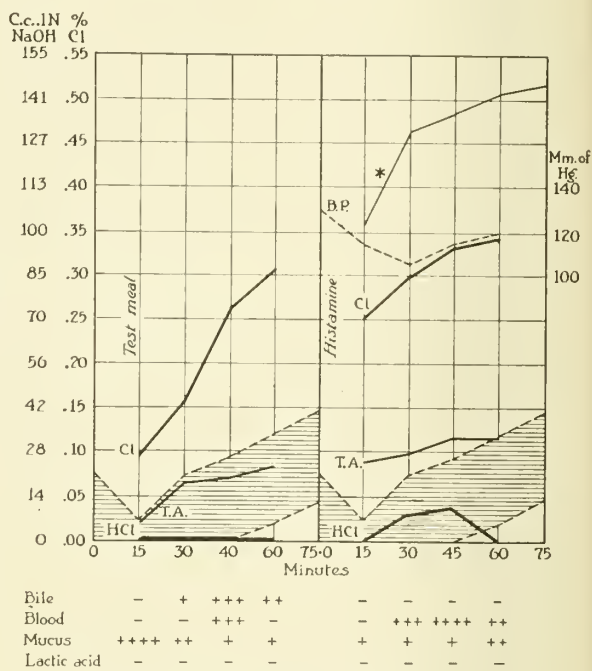
Regurgitation was definitely shown by the regurgitation of bile in varying degrees in all five cases. That the pancreatic juice may be regurgitated without bile, however, was shown by Wright and Medes. It is difficult to explain the wide difference between the hydrochloric acid and the chloride curves in these cases.

In the remaining thirteen cases showing no free hydrochloric acid either after the test meal or after histamine there were three cases of pernicious anemia. These thirteen cases divide



\* Total chlorides (as Cl); Walquist, Berglund and Sherwood  
Shaded area: Normal acidity; Bennett and Ryle

Fig. 1. G. M., age 34. Appendectomy, cholecystectomy, gastroenterostomy for ulcer. Stomach emptied in 2½ hours. No acid with fractional meal. Free hydrochloric of 27 after histamine; chloride .55 showing a high degree of neutralization.



\* Total chlorides (as Cl); Walquist, Berglund and Sherwood  
Shaded area: Normal acidity; Bennett and Ryle

Fig. 2. G. F. H., age 33. Chronic tonsillitis, mucous colitis, gallbladder disease? No acid fractional meal. Free hydrochloric of 9 after histamine. Chloride curve up to .31 after fractional meal; .34 after histamine.

after histamine. In the gastroenterostomy, the chloride curve went up to .55. This was a very large gastroenterostomy opening, the barium leaving the stomach in 2½ hours. The other four cases showed a chloride rise from .25 to .35. After the test meal there was more variability in the chloride curves, one showing a drop and later a rise, the other showing a rise. This group might be interpreted as a group in which varying amounts of acid are being secreted which are completely neutralized by regurgitation during

easily into two groups: (1) seven cases (Figs. 3 and 4), two of which showed a rise of chloride after the test meal; (2) five showed no rise. They all showed a rising curve of chloride after histamine, the chloride varying from .3 to .45. There were two early but clinically definite cases of pernicious anemia in this group.

We might explain some of these cases in the same way as before, a still smaller amount of acid being completely neutralized by regurgitation. Certainly not all of them could be ex-

plained in this way. The fact that there were two cases of pernicious anemia in the group would speak against acid being secreted according to the view generally held that there is no free hydrochloric acid secretion in pernicious anemia. We must assume, I believe, some other source for the chloride. These sources might be:

1. Regurgitated chloride from the duodenum. The highest chloride of the duodenal contents is reported by Hammerstin as about 0.2 per cent. This is too small an amount to be a factor, as are these cases which showed curves of from .25 to .4.
2. Blood and mucus we felt could not explain the rise because some cases showed a marked

proof that chloride is secreted as such in the stomach.

The second group of six cases (Figs. 5 and 6) showed no free hydrochloric acid and no rise in chloride after the test meal or after histamine. In three of these cases we could not get enough material to examine. We can be absolutely sure there was no acid secreted in this group. There was one case of pernicious anemia in this group of four years duration.

Dr. C. M. Watkins studied the blood of all these cases morphologically and he agreed with the clinical diagnosis in all but one of the pernicious anemia cases which had had liver before. Minot and Murphy have shown, confirmed by

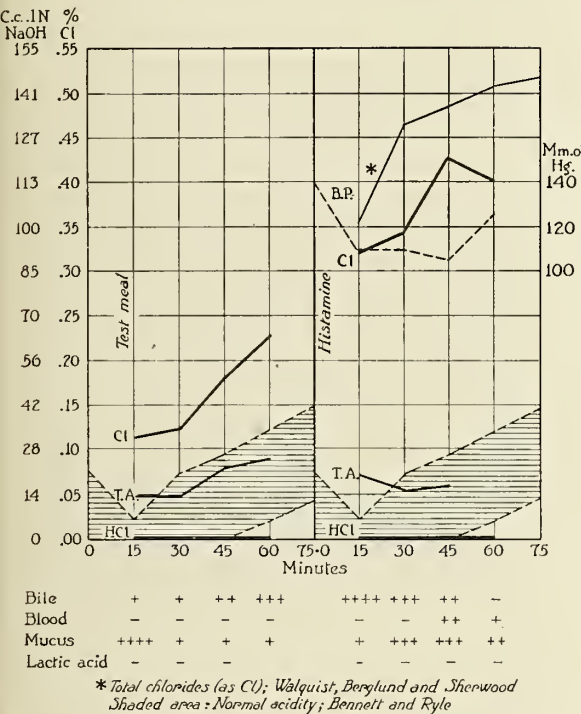


Fig. 3. A. P., age 35. Recurring mild appendicitis. Raynaud's disease mild (white fingers and toes). No acid fractional meal. No acid after histamine. Chloride up to .23 after fractional meal; .43 after histamine.

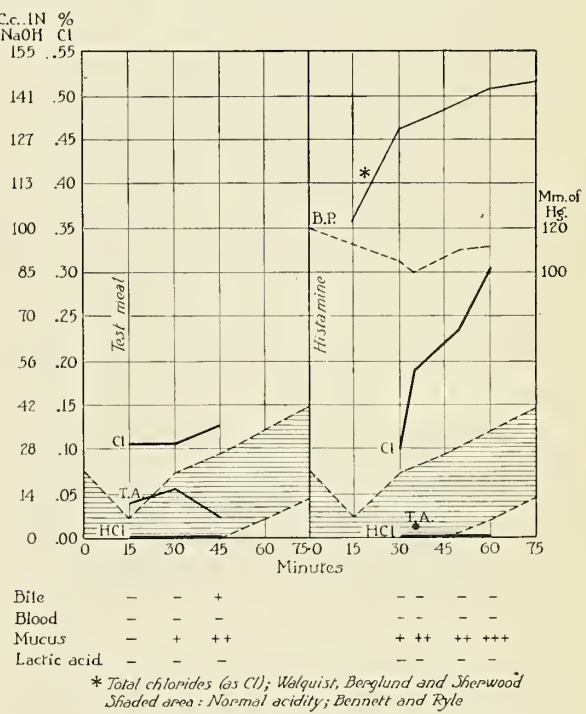


Fig. 4. Mrs. O. K., age 44. Mild secondary anemia, recurring attacks of chronic cholecystitis mild. No acid fractional meal or after histamine. No rise of chloride after test meal, but a marked rise up to .30 after histamine.

chloride with no blood and little mucus, and other cases showed no rise in chloride, although they had large amounts of blood and mucus.

3. There might be increased chloride from the test meal, as ordinary bread was used, or possibly from the saliva or blood. This might give a higher base line for chloride, but would not explain the rising curves.
4. Actual secretion of chloride would explain these curves but there is no experimental

Watkins and others, that the blood loses its pernicious anemia characteristics after liver feeding.

We concluded from our results so far that the ordinary methods of examination are satisfactory as a rule. The procedure in clinical cases should be, first: An Ewald test meal unless achylia is suspected. If free hydrochloric acid is found this is sufficient. One of the great advantages of the Ewald test meal is that one can completely evacuate the stomach much quicker and more

completely. If no free hydrochloric acid is found, a fractional meal should be given, as about 6 per cent of the cases showing no free hydrochloric acid with an Ewald meal will show acid with a fractional meal.

If there is no acid by the fractional meal, then histamine might be tried, but I believe small doses should be used. Although we saw no serious untoward effects from the drug, two of our patients did show mild shock symptoms which quickly passed off on lying down. Hashimoto working at the Mayo Foundation under Doctor Willius showed that histamine will increase the non-protein and urea nitrogen in the blood and cause partial to complete heart block in dogs.

ordinary method of examination is not enough to greatly invalidate a large group, I reviewed a series of achylia cases. In a series of 3,000 patients seen in my office, 778 were given test meals. Of these 778, 116 had no free hydrochloric acid. (Only about one-fourth of these cases, however, were given a fractional meal.) This is 15 per cent, which is about the average reported in unselected series by Faber and Hurst. This series is unselected except that practically all of them had some gastrointestinal complaint. Of these 116 cases, 60 of them were females and 56 males. The age distribution was as follows:

No age given.....	3
10 to 20 .....	1

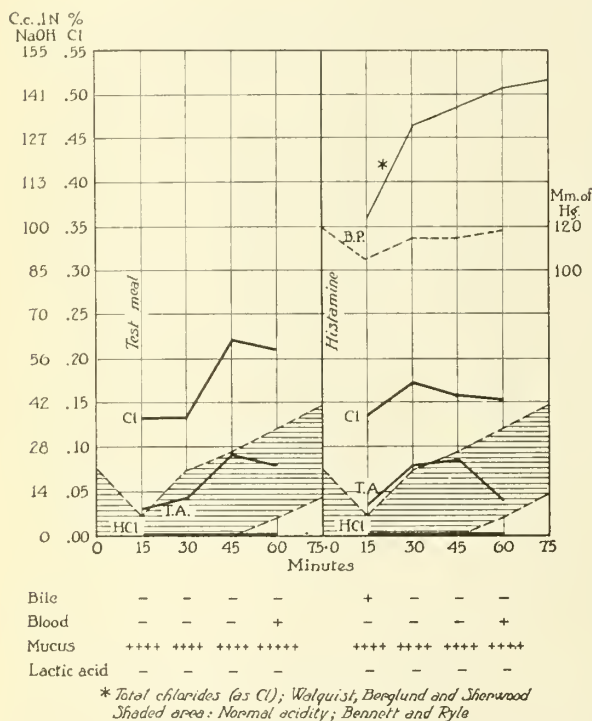


Fig. 5. P. A. Pernicious anemia of four years duration. Has had several transfusions. Hemoglobin 50 per cent. Red blood cells 1,904,000. No acid after fractional meal or after histamine. A slight rise of chloride after testmeal, but not higher than might be possible from regurgitation. No rise in chloride after histamine.

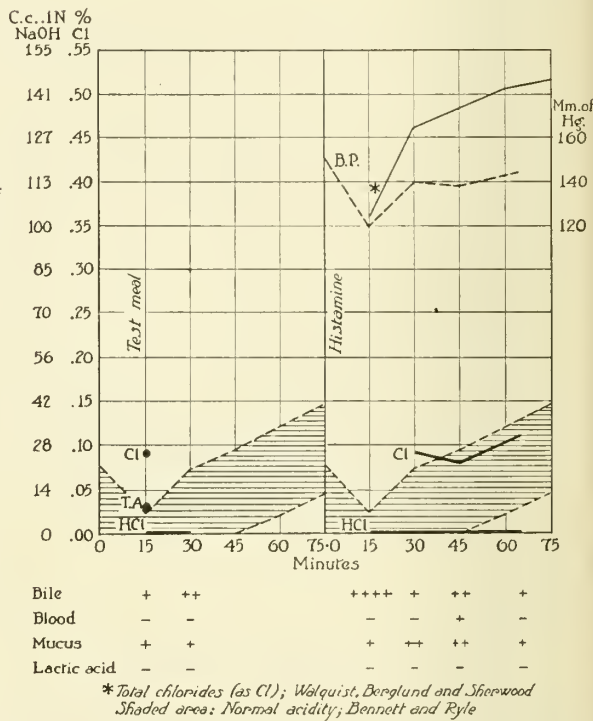


Fig. 6. Mrs. W. L. G., age 41. Hyperthyroidism. Basal metabolism plus 47. Mild cardiac decompensation. Fibroid uterus. No free hydrochloric after testmeal or after histamine. Only enough material for one determination after testmeal. No rise in chloride after histamine. Only small amounts of material could be obtained.

Very much larger doses, however, were used in his experiments. Inasmuch as Berglund, Wahlquist and Sherwood found that there was a maximum secretion in normal cases following doses varying from 1 mgm. to 3 mgm., I believe that .5 mgm. would be a much safer dose to use, and would give the same result with the exception that the secretion would not last so long.

Concluding that the percentage of error by the

20 to 30 .....	11
30 to 40 .....	24
40 to 50 .....	28
50 to 60 .....	28
60 to 70 .....	18
70 to 80 .....	1
80 to 90 .....	1

Total— 116

The age distribution of the whole series was as follows:

No age given .....	3
10 to 20 .....	16
20 to 30 .....	169
30 to 40 .....	239
40 to 50 .....	156
50 to 60 .....	120
60 to 70 .....	62
70 to 80 .....	12
80 to 90 .....	1

Total— 778

A comparison of these two groups in an attempt to find out what relationship there was between the age distribution of achylia and age distribution of the whole series of cases showed that the percentage of achylia cases reaches a maximum much later than the maximum of the total number of cases (Fig. 7).

It seemed of interest to analyze this series and determine as nearly as possible what was the trouble with these individuals. This of course is subject to the usual errors in clinical diagnosis. The clinical diagnoses were as follows:

Gallbladder disease .....	48
Chronic tonsillitis, pyorrhea, sinusitis.....	10
Chronic arthritis .....	10
Cancer of the stomach .....	9
Pernicious anemia .....	6
Chronic gastritis (alcohol or snuff).....	5
Cardiovascular (mild decompensation)....	4
Early tabes .....	3
Marked secondary anemia .....	2
Chronic pulmonary tuberculosis.....	2
Chronic salpingitis .....	2
Gastroenteritis (acute) .....	2
Appendicitis (subacute) .....	2
Gastroenterostomy .....	2
Acute catarrhal jaundice.....	2
Chronic cystitis and pyelitis.....	2
Hyperthyroidism .....	2
Esophageal spasm .....	1
Normals .....	2

Total— 116

In twenty-five cases the diagnosis of chronic tonsillitis, pyorrhea or sinusitis was made in addition to other pathology. Three cases had chronic arthritis in addition to chronic cholecystitis. Martius and Hurst would consider chronic achylia as largely due to a familial tendency.

Faber considers it due to gastritis. One might conclude from this series that achylia is largely a complication of chronic diseases which are most frequent after middle life.

If one excludes the cancer and pernicious anemia cases from this series, in 48 of the re-

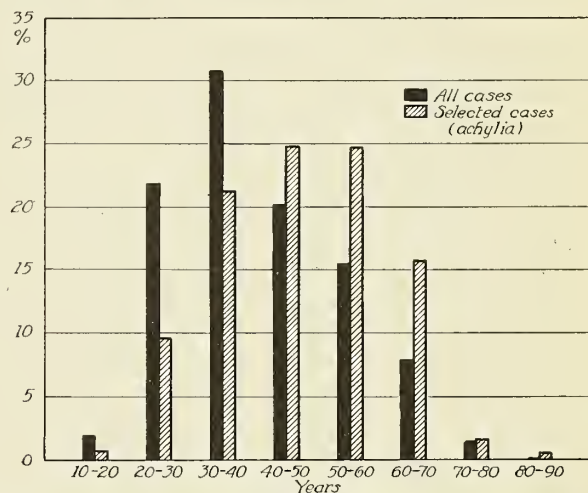


Fig. 7. Shows the percentage of achylia cases in 10 year periods, rising in a gradual curve and reaching a maximum much later than the maximum of the total number of cases.

maining 101 a definite clinical diagnosis of gallbladder disease could be made. Only the cases having definite attacks of pain or tenderness over the gallbladder region were included in the gallbladder group. In many of the remaining cases it could be justly suspected. Dye tests were not made on these cases. This agrees with the conclusion of Rovsing, that gallbladder disease is a common cause of gastric achylia and would indicate that the gallbladder should be suspected in all cases of chronic achylia with upper abdominal symptoms without obvious causes such as pernicious anemia, carcinoma of the stomach, chronic tuberculosis or general constitutional disease.

In twenty-five of these cases symptoms had been present for less than one year. In fifty-six they were present for one year or more; in twelve cases over 10 years. In the remaining cases a definite duration was not stated.

The average total acidity in the whole series was thirteen. The highest total acid was found in a case of cancer of the stomach with retention, namely 112. One sees in the literature that cases can be considered complete achylia which show no free hydrochloric acid and a total acidity of 10 or less. This would have excluded four cases of pernicious anemia out of six. One of

the pernicious anemia cases had a total acidity of 25.

The rapidity of emptying must be an important factor in determining the amount of organic acid. In many of the cases the fasting contents showed more total acid than after the meal. Twenty-eight of the 116 cases were examined twice or more times at varying intervals of time. In seven of these cases the absence of acid was not a constant finding. In three of the cases there was acid at the first examination, which later disappeared.

One case was that of a woman aged 66 first seen in January, 1918. The free hydrochloric acid at that time was 15 and the total acidity was 25. In 1919, the free hydrochloric acid was 11 and the total acidity 27. In 1927, there was no free hydrochloric acid and a total acidity of 13. I saw this woman first with an acute inflammation of the gallbladder. She has been quite well all these nine years, except for occasional attacks of indigestion. She has had no attacks of pain.

The second case was a man aged 42, seen October 1924. At that time he had free hydrochloric acid of 11 and a total acidity of 25. He showed no acid on two fractional meals or after the injection of histamine in 1927. This man, at the first examination, had a definite subacute cholecystitis with pain and tenderness. He has been well, since, except for some gas on his stomach at times which he says makes him careful of his diet.

The third case was a man aged 38, who had ulcer symptoms and had been treated for ulcer with relief before I saw him. His free hydrochloric was 60 and the total acid was 88. Exploratory laparotomy showed inoperable carcinoma of the stomach. Three months later the free hydrochloric acid was 0 and the total acid was 8.

There were four cases where the free hydrochloric acid came back after showing complete absence. One case, a man aged 43, when first seen was being actively treated for early tabes. He complained of loss of appetite and gas on his stomach. At that time the examination showed no free hydrochloric acid and a total acidity of 10. One month later after stopping treatment the free hydrochloric acid was 33 and the total acidity was 49. The second case was

one of acute catarrhal jaundice in a vigorous man of 30. During the height of his jaundice he had no free hydrochloric acid and a total acidity of 6. One month later, after the jaundice had cleared up, the free hydrochloric acid was 23 and the total acidity was 38. The third case was a man, aged 55, seen in 1925 with subacute gastritis following an acute upper respiratory infection. At that time he had no free hydrochloric acid and a total acidity of 12. The diagnosis of chronic gallbladder disease was also made at that time. Two years later the free hydrochloric acid was 26 and the total acidity was 44. This man has been well except for some indigestion and constipation which he has been told is due to a spastic colon. The fourth case was that of a man aged 39, who was a user of snuff and a periodic alcoholic. At first examination he showed no free hydrochloric acid and a total acidity of 14. Three years later the free hydrochloric was 16 and the total acidity was 30.

There were two pairs of husband and wife in this series. A family history of either achylia or pernicious anemia was not obtained in any of the cases in this series.

To summarize:

1. Eighteen cases of complete achylia by fractional test meal examination were given histamine and the free hydrochloric and the total chloride estimated. Five of these cases showed a definite amount of free hydrochloric acid after giving histamine. The remaining thirteen cases showed no free hydrochloric acid after histamine. In these cases there were three cases of pernicious anemia. The total chloride after the use of histamine showed a definite rise in all the five cases showing hydrochloric acid and in seven of the cases in which there was no free hydrochloric acid. The remaining six cases showed no rise in chloride.

2. A review of 116 cases of achylia found in 778 gastrointestinal examinations. In only two of these cases could nothing be found which might have had some bearing on the presence of the achylia. Gallbladder disease was the predominant diagnosis made in this series of cases. In three cases free hydrochloric acid was present at the first examination and later disappeared. In four cases it appeared after having been absent at a previous examination. There were two pairs of husband and wife in this

series. There was not a family history of achylia or pernicious anemia in any of these cases.

Conclusion: From this study, then, it might be concluded that achylia is seldom found in the first two decades of life; that its frequency rapidly increases toward middle life; that it may be temporary and associated with local inflammation of the gastric mucosa or with toxic conditions both chemical and bacterial; that it may be due to reflex causes from the gallbladder, appendix, pelvis or lungs; that some cases which have repeatedly shown no free hydrochloric acid by the usual fractional meal over several years show free hydrochloric acid when given histamine; that other cases of achylia show no response to histamine. In this study, all the cases of pernicious anemia were found in this group.

That some cases which give no free hydrochloric after histamine show no change in the chloride curves while others give a marked rise in chloride which cannot be explained at the present on any other basis than an actual chloride secretion from the stomach.

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## ANALGESIA IN CHILDBIRTH

The Council on Pharmacy and Chemistry has authorized publication of a report prepared by R. A. Hatcher on the Gwathmey Method of Anesthesia, concerning analgesia in childbirth. The available evidence indicates that the use of morphine during the first stage of labor and ether or chloroform for the second stage appears to be the accepted procedure and that morphine with chloroform appears to present special dangers. With proper precautions morphine sulphate in the dose of 0.01 Gm. (one-sixth grain) for a woman of average size, is virtually without danger. The report concludes that no method of inducing analgesia is suitable for universal use. So-called painless childbirth is frequently a most difficult problem. The general practitioner is often misled into believing that he can secure better results by the method that he reads about than by the methods with which he is familiar, when in truth it presents no essential advantage, and, on the contrary,

it will prove inferior in his own hands to that with which he has acquired a certain degree of skill. In view of this, the commercial exploitation of proprietary products based on the Gwathmey formulas is potent for much harm, since it will inevitably tend to promote the thoughtless and ill-advised use of the method. (*Jour. A. M. A.*, December 31, 1927, p. 2258.)

## RICINOLEATED SCARLET FEVER TOXIN

Unofficial reports indicate that the ricinoleated toxin has not protected effectively against scarlet fever in several institutions in which it was given. Theoretically it hardly seems possible that a single dose would establish a lasting immunity, and it is hardly to be expected that the addition of a "detoxifying" agent will increase the immunizing properties of a toxin. Ricinoleated toxin does not appear to be as reliable as the five doses of the Dick toxin. (*Jour. A. M. A.*, December 17, 1927, p. 2135.)

## ACUTE PANCREATITIS\*

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ACUTE pancreatitis differs from acute inflammation of other organs in that it is essentially a process of self digestion. Some unknown element transforms the pancreatic zymogens into ferments within the gland structure itself.

The pathology of acute pancreatitis is not clear because of the fact that reconstruction of the picture from tissues partially digested is not possible, due to the loss of staining qualities. Therefore the solution of the etiology of acute pancreatitis must come from experimental evidence or data from the operating room.

We know there are only four possible avenues of entry for this element to the pancreas: the ducts, the blood and lymph streams and contiguous organs. Experimental evidence shows that injection into the ducts of bile, snake venom and many other substances can produce an acute pancreatitis. Section of the gland produces a local necrosis. Surgeons see many instances of acute pancreatitis with necrosis resulting from extension of infection along the lymphatics from the biliary tract. Ulcers of the posterior wall of the stomach have been associated with pancreatic necrosis. Thus it is barely possible that all these avenues of entry may be used.

It was my unfortunate experience some 15 years ago to produce an acute pancreatitis in an operative case. During an appendectomy for chronic appendicitis I felt of the gallbladder, found it distended and in order to determine the presence or absence of stones exerted some pressure upon it. There was a sudden release of tension as the gallbladder relaxed; no stones were felt in either the gallbladder or the ducts. No other evidence of disease was found. Withing twenty-four hours it became imperative because of the alarming condition of my patient to reopen the abdomen. There was a beef-soup-like fluid in the peritoneal cavity; tallow-like spots were scattered through the omentum; the peritoneum looked as though it had been burned with pure carbolic. This was evidence enough

of the source of the trouble. A shallow rapid pulse, pain out of all proportion to the signs and persistent vomiting were a part of the picture. A large portion of the pancreas sloughed, but the patient finally recovered.

Needless to say, I have never squeezed another gallbladder to find out if there were stones in it. I learned definitely that a distended gallbladder spells disease, and that stones are of a minor consideration. I learned that bile forced out of the gallbladder may not always enter the bowel; that there was a sphincter of muscle fibres around the junction of the common and the pancreatic ducts and just below it; that closure of this sphincter may convert the common and pancreatic duct of Wirsung into one open channel. Is it not reasonable to believe that muscular contraction of the gallbladder might do exactly what I did with my hand?

In another case there was a history of the patient's having eaten about a dozen large, hot biscuits for supper. Pain developed within a few hours, increasing with such rapidity that he came for operation within 12 hours. The operative findings were the same as those in the previous case, with the addition of a gallbladder filled with very black bile. Can it be that this abuse of digestion produced a spasmodic contraction of the sphincter of Oddi and a powerful contraction of the gallbladder?

Why is it that dilute hydrochloric acid placed in the lumen of an isolated loop of duodenum having only its blood supply will stimulate pancreatic secretion? The nerve supply is cut off. Only stimulation through the blood stream is possible. What effect would a heroic stimulus via the blood stream have? Possibly a break in the synchronous action of nerve control of the sphincter and vascular control of the secretion may have some bearing upon this damming back of the pancreatic ducts. A study of the vascularity of the lobule shows glomeruli in relation to the Islands of Langerhans. This glomerulus differs from the glomerulus of the kidney in not having a single afferent vessel but in freely anastomosing with the vessels running between

\*Read before the Red River Valley Medical Society, Crookston, Minn., May 27, 1927.

the acini. Why is the blood supply to the glomerulus so abundant if it carries so little to the glomerulus and only the insulin away. Possibly the Islands have a dual role. I realize that this is purely speculative, but surely interesting.

Anyone doing surgery of the biliary tract has run into cases where there was marked infection of the gallbladder and areas of necrosis in the pancreas; so the relation of infection and its lymphatic transmission as a cause of acute pancreatitis is clear.

Opie has explained the relationship of stones lodged in the ampulla of Vater and bile backed into the duct of Wirsung.

The classical symptoms of acute pancreatitis are those of the fulminant type or acute hemorrhagic pancreatitis. This type is characterized by necrosis of large portions of the gland and extravasation of blood. In other types the necrosis is of a lesser amount and the symptoms of a corresponding degree in intensity.

The outstanding symptom is pain. In the hemorrhagic type it is agonizing, located usually in the epigastrium early, later to be referred anywhere along the course of filaments of the celiac plexus. Its relief requires heroic doses of morphia.

Tenderness early is rather general over the epigastrium but later is localized over the part of the pancreas involved. Palpation is usually rather difficult, owing to the depth of the gland from the surface.

Rigidity in my experience tells more than anything else, except the pulse. The depth of the gland from the parietal peritoneum lessens the boardlike rigidity usually associated with upper abdominal peritonitis. In the lower abdomen there is a sensation not unlike that experienced from blood in the peritoneal cavity—a feeling on examination resembling that of putting your hand into stiff bread dough.

Peristalsis in the lower abdomen ceases early and a reversal in the upper tract results in persistent vomiting. I have noted in two cases a typical stepladder distension of the bowel similar to that seen in ileus.

Thus we have a picture resembling both a perforation of a viscus and an obstruction.

One fears to appear dogmatic in differential diagnosis in cases of acute pancreatitis. However, I have found it of value where there was hesitancy in making a diagnosis as between per-

forative ulcer and obstruction to have an alibi ready in the shape of acute pancreatitis. This has been of infinite service to me and no doubt many of you doing the same type of work would find it of like value. Most diagnoses of acute pancreatitis are made either after the abdomen is opened or at necropsy. The depth of the lesion and its proximity to the celiac plexus make for a wide reference of the symptoms and the simulation of other acute abdominal disease. This obscurity and lack of definite localization should be significant.

Recently Moynihan laid stress upon the presence of surgical shock in acute pancreatitis and used it as a differential point. He pointed out that in perforation the pulse may be rapid but the volume does not change as it does in acute pancreatitis. I noted in a recent case, which, by the way, died before operation, a blood pressure reading of 95/80 and another later of 82/70. There was a definite palpable mass in the region of the pancreas on the seventh day with classical signs of pancreatic necrosis. The myocardium was so weak in this case that I did not dare risk even transportation and hoped for better results from operation later, as death was about all I anticipated with this pulse pressure as it was. I believe, however, that temporary surgical shock from the absorption of products of pancreatic digestion varies with the degree of necrosis.

Treatment of acute pancreatitis is surgical. Drainage is the key note. Drainage of the gland; drainage of the peritoneum; decompression and drainage of the biliary tract and drainage by dilution of the vascular system. Drainage of the gland limits the process of necrosis and also gives exit to the toxic products.

Access to the gland is obtained in three ways.

1. In cases where the stomach lies low, the approach may be made through the gastro-hepatic ligament. There is one disadvantage to this exposure in that neither head nor tail of the organ are exposed. It is, however, to be preferred in cases where there is a localized abscess pointed just above the stomach.

2. The gastro-colic ligament may be divided and the lesser peritoneal cavity reached directly. This gives the best drainage, the stomach being retracted up and the colon down, exposing the whole pancreas.

3. The mesentery of the transverse colon may be incised. The danger point in this ex-

posure is injury to the superior mesenteric and the middle colic artery, with resultant gangrene of the bowel.

After exposure of the gland, any areas showing discoloration from hemorrhage are punctured with a blunt forceps, sloughs are removed and drainage established. The skin should be protected from erosion by the trypsin of the pancreatic secretion.

The gallbladder is distended in pancreatitis. This means increased tension in the biliary tract. Decompression serves two purposes: drainage of infection and relief of tension. I have used drainage of the gallbladder and maintained it over considerable time. Others advocate removal of the gallbladder and drainage of the hepatic duct, but I cannot approve of radical surgery in a patient with such limited reserve power.

In a consideration of the treatment of shock in these cases I am convinced that the cause is deeper than damage done to the sympathetic ganglia. The cyanosis is thought to be due to a hemolysis. This disappears in a few days. Dilution of toxins should hasten its disappearance and be a great aid in ameliorating the shock.

Otherwise the treatment of shock does not differ from that in any other situation.

This report covers twelve operative cases and one non-operative. There were two deaths, one coming within twenty-four hours in a case operated upon and the other in the unoperated case. The time of operation seems to be the vital point in saving these patients. Necessarily, early diagnosis and the courage to explore even if the diagnosis is uncertain, gives opportunity for many more operations at an early hour.

To summarize:

1. Acute pancreatitis is a process of self digestion.
2. The cause of pancreatitis has not been definitely determined.
3. The symptoms point to both a peritoneal perforation and an intestinal obstruction.
4. The treatment should follow definite surgical principles.
5. Pancreatitis is not as rare a condition as we are led to believe by the text books.
6. If we were on the lookout for the conditions we would recognize more cases.

#### YOUTHRAY, ANOTHER LEAD AND SULPHUR HAIR DYE

"Youthray," which, according to the label, "restores your youthful natural color to gray hair" and is "not a dye," is put on the market by the Ray Laboratories, Chicago. A booklet declares that "Youthray is entirely harmless" and is "unusually effective for ending dandruff" and for "promoting scalp and hair health." The A. M. A. Chemical Laboratory analyzed the preparation and reports that it belongs to the lead acetate and sulphur type of hair dye. While cosmetics do not come under the control of any federal law, the claims regarding dandruff and "hair health" and similar claims should bring the preparation within the jurisdiction of the federal authorities. (Jour. A. M. A., December 17, 1927, p. 2133.)

#### POLIOMYELITIS ANTISTREPTOCOCCUS SERUM

In cases of epidemic poliomyelitis that come under treatment after the paralysis is well established, the best that can be done is to give as good general medical and nursing care as possible. Cases have been described in which convalescent serum—serum from patients who have recovered from the acute symptoms of the disease—appears to have prevented the development of paralysis. The use of Rosenow's poliomyelitis antistreptococcus serum can be justified only as an experiment. The claims of Eli Lilly & Co. to the contrary notwithstanding, this serum so far has not been accepted as of such value as to warrant its general use. (Jour. A. M. A., December 10, 1927, p. 2061.)

## POSTOPERATIVE ILEUS\*

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THERE are few emergencies that a surgeon has to meet that are more discouraging than a case of postoperative ileus. In the first place the keen disappointment that he suffers at the failure of the first operation to relieve his patient, and then the necessity for subjecting his patient, in a highly critical condition, to a second operation more hazardous by far than the first, and the dismay and dread of the patient who has just passed through a difficult ordeal, produce a situation which requires real courage and prompt, decisive action on the part of the surgeon.

Postoperative ileus is encountered following many and various abdominal operations. It may rarely occur subsequent to extra-abdominal operations and conditions, as, for instance, in a case which came under my observation where a five months abortion of a decomposed fetus was followed on the ninth day by acute ileus. It may also follow injuries, as, for instance, in a man recently observed who, after a severe fall, developed acute ileus.

The great majority of cases, however, follow operations for acute appendicitis and pelvic conditions, and it has been the observation of many surgeons that most postoperative obstructions are found near the ileo-cecal valve and in the pelvis, perhaps due to the fact that a relatively large proportion of abdominal operations are in the lower abdomen.

High intestinal ileus, either paralytic or organic, is not uncommon after any abdominal operation but occurs perhaps more often following stomach operations, and is usually more toxic and more rapidly fatal.

The term ileus is used in this paper to mean both paralytic and obstructive, as the differential diagnosis between paralytic and obstructive postoperative ileus is not always possible previous to the institution of treatment, and the emergency of the situation precludes methods for accurate differential diagnosis with accompanying delay.

The clinical picture of a moribund postoperative case of ileus whether paralytic or obstructive

is essentially the same. The condition is that of a profound toxemia, with some of the added symptoms of shock. There is great prostration and evidence of dehydration. Usually there is vomiting; this vomiting is not projectile nor forceful, but rather a weak gulping up or slopping over of an over-filled stomach; the vomitus is a dark and foul regurgitation from stomach and duodenum. The abdomen may not be greatly distended, and there may not be much abdominal pain unless there is peritonitis present. The blood pressure drops and the pulse becomes rapid, weak and thready. The skin becomes moist and clammy; there are muscular twitchings and occasionally tetany. There is suppression of urine; and a drowsy semi-comatose state of mind gradually develops.

Many opinions have been advanced to account for the development of ileus so frequently after operation and its complete absence in cases where operative conditions seem to be similar.

Wilkie of Edinburgh has said recently that in a review of the post-mortem examination of a large series of so-called general peritonitis deaths occurring five to ten days after operation for acute appendicitis, intestinal obstruction accounted for 75 per cent of the cases, and that it has been proven that quite recent lymph-adhesions in these cases are sufficient to cause fatal intestinal obstruction.

Moynihan says that "postoperative obstruction coming shortly after operation is almost invariably due to infection, especially from pelvic peritonitis originating in appendicitis, or originating in septic conditions of the pelvic genital organs." He also emphasizes that a "limited peritonitis frequently causes a complete paralytic obstruction of the segments of intestine involved, which is so severe that unless dealt with promptly by surgery it will soon end fatally."

There is a type of obstruction brought on by rupture of an appendix lying over the brim of the pelvis or within the true pelvis, which in advanced cases is prone to cause localized peritonitis of a pelvic loop of ileum and also of the pelvic loop of the sigmoid.

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Sampson Handely many years ago emphasized these cases and showed how they could be rescued by anastomosing the ileum to the transverse colon and by cecostomy in order to side track the contents of both small bowel and colon from the obstructed sigmoid.

Long, of Greensborough, N. C., also has recently called attention to these cases and pointed out that enterostomy, which has become frequently a life-saving operation in acute obstructions, is not sufficient in these cases, but an anastomosis as above mentioned is essential. Fortunately, this type of obstruction is not very frequent.

On post-mortem examination of fatal cases of general peritonitis one sees the great tendency for the profuse lymph-adhesive exudate to bind coils of intestine together to form kinks. In these cases, actual organic obstruction follows.

On the other hand, where adhesions have not yet formed and where peritonitis is still localized in a single coil of intestine with injection of the superficial blood vessels and loss of normal luster, and the normal suppleness is giving way to a stiffening of the bowel, the paralytic type of ileus may result, and produce just as fatal an obstruction as the organic type.

Besides infection and peritonitis there are other causes of ileus which are not easily explained except on a basis of nerve disturbance. Rough handling, actual injury to the bowel, excessive manipulation, prolonged exposure to the air, as well as an irritating foreign body in the intestinal tract, may produce a paralytic form of ileus.

In this connection the theory of intestinal gradients as proposed by Alvarez is very interesting. Alvarez holds that peristalsis and reverse peristalsis are not produced and controlled by action of the nervous system on the involuntary muscle of the bowel but by inherent rhythmic gradients; in other words, the nervous system does not stimulate and control the involuntary muscle of the intestines to contract in peristalsis and in reverse peristalsis, but the involuntary muscles of the intestines have a systematic, orderly, inherent, rhythmic contraction, independent of the nervous system; that the gastrointestinal tract is largely autonomous; that is, it carries within itself the mechanism necessary to peristalsis. Alvarez shows by numerous ani-

mal experiments that rhythmic peristaltic waves can be demonstrated in isolated segments of the bowel where all nerve control has been severed. The natural rhythmic peristaltic waves or gradients of the intestinal tract are onward, just as the ripples travel after throwing a pebble on the smooth surface of a sheet of water. The waves travel onward, one wave pushing the intestine ahead to form new waves.

Alvarez says that any injury to the bowel, infection, or foreign body, or disease causing irritation will stop the natural downward peristaltic waves and turn them backward in reverse peristalsis. Therefore acute infection of the appendix or tube or operation with operative injury or exposure of bowel to air, or rough handling or any irritation may sufficiently stop the natural downward peristalsis and start up reverse peristalsis and even produce an ileus.

Alvarez's gradient theory is not accepted by very many observers so far, but offers a very interesting explanation of reverse peristalsis as observed in so-called paralytic ileus.

Many interesting theories have been proposed of late years to explain the cause of death in patients with ileus. The formation of some highly toxic substance is held as the cause by most research workers, but the definite cause is yet unknown. Experimental studies have been attempted by many to clear up this problem and to find some rational method of overcoming it. A bacterial change, both proteolytic and putrefactive, has been advocated; also a primary proteose poison formed by the perverted activity of the mucosa. A shock complex following acute obstruction, rather than the formation of toxic substances, was advocated by Hausler and Foster as the deciding factor causing fatal issue; later they have held that the period of dehydration from failure of fluid intake, excessive fluid loss from vomiting, urinary, respiratory, and skin excretions in acute obstruction uncomplicated by tissue injury, corresponds to the time necessary to produce death by complete starvation of both food and water. Therefore they hold that death in uncomplicated cases of acute intestinal obstruction is due mainly to starvation.

Most observers agree that an alkalosis develops, perhaps due to the loss of chlorides and the liberation of sodium, and therefore the use of sodium bicarbonate in stomach washings, by the

bowel or into the blood, in these cases is contraindicated.

Careful blood chemistry studies have shown a loss of chlorides and a rise of carbon dioxide combining power of the blood plasma and the rise of non-protein nitrogen in the blood.

The loss of chlorides in the blood is so striking that it is pointed out by McVicar as of diagnostic significance when found early in a case suspected of ileus, and may be of much help in recognizing the serious condition just beginning. Even the urinary output of chlorides is diminished and may be of diagnostic help. There is also an actual diminution in the quantity of the urinary output.

The gradual drop in the blood pressure readings becomes more marked as the disease progresses and the toxic prostration becomes more marked, but repeated early readings will show a definite drop which is important if it continues.

#### TREATMENT

It is a frequent observation that after operation in a serious case of appendicitis, if a fecal fistula forms, the pain and abdominal distension improve and the patient becomes more comfortable.

Therefore in late operations for acute appendicitis where a distended cecum is a feature and also in bad peritonitis cases, Wilkie of Edinburgh advises that cecostomy be done at the original operation, placing a tube into the distended cecum, inverting the walls of the cecum over the tube to provide a valve-like opening which will allow the fecal fistula to close after removal of the tube. This procedure at first operation may forestall an inevitable oncoming ileus. This cecostomy can also be employed postoperatively after ileus has developed by opening the operative wound and exposing the distended cecum.

Then we have the life-saving procedure of doing an enterostomy, which has become so popular during the past few years. The practice of opening the abdomen in the midline under gas-oxygen or local anesthesia and inserting a small tube into a distended loop of bowel has relieved a great many cases of postoperative ileus and saved many a moribund patient.

But, again, many such enterostomies have proven a disappointment, especially if the loop

selected has been low, for instance in the ileum, where perhaps a small amount of gas has been liberated, but little or no toxic bowel content has escaped. In some such desperate situations a second enterostomy done higher up, for instance in the jejunum, has proven successful in reaching and removing large quantities of toxic fluid and flatus, thus decompressing the distended abdomen and relieving the ileus.

Therefore, it has become a more frequent practice of late years to insert a tube high into the jejunum, thereby making quite certain that the liquid contents of the upper intestines are reached and drained. This part of the bowel can perhaps be reached most easily and with less interference by a muscle-splitting incision three inches to the left of the midline, slightly above the umbilicus.

Hayden and Orr, of Kansas City, after a series of animal experiments on dogs to test out the value of high jejunostomy in acute high obstruction, have come to the conclusion that jejunostomy on dogs was not a life-saving procedure, but that it was an added surgical hazard which increased the mortality rate instead of decreasing it. They can not correlate their discouraging results on dogs with the favorable results reported by many experienced surgeons, but they add that the results on dogs may not run parallel with human beings. They found that in these experimentally obstructed dogs there was always a deficiency of chlorides in the blood, and that intravenous infusion of a two to five per cent sodium chloride solution in large quantities gave better results than enterostomy alone or than sodium chloride and enterostomy combined.

McVicar also makes the observation that the toxicity of the regurgitated fluid has not been determined and its removal is not always the essential part of the treatment, and that when the tide can be turned and peristalsis renewed and the fluids be directed downward, they become useful and do not produce further toxic symptoms. Therefore he lays more stress on supplying fluids, chlorides and nourishing carbohydrates under the skin and into the veins than on removing the toxic stomach contents by continued lavage or jejunostomy.

The dramatic relief of some cases of ileus by jejunostomy might possibly then be explained, not by the removal of toxic intestinal contents but by the decompression of the tympanic par-

alyzed bowel, allowing it to regain sufficient tone to start up normal peristalsis.

The treatment then is not always the same; there is not yet any outstanding remedy which will relieve all cases. Intravenous and hypodermic introduction of sodium chloride or carbohydrates and water particularly seems to be of more importance than other remedies; removal of stomach and duodenal secretions by means of lavage, or the duodenal tube or jejunostomy is evidently life saving in many cases, perhaps not due to removal of toxic contents so much as to relief of distension, allowing muscle tone of the bowel and peristalsis to be renewed.

Early recognition and a timely understanding of the real situation is not an easy matter, but demands strenuous concentration and a most exacting studious frame of mind, taking notice of the minutest detail, work from which we often shirk.

It is helpful to be alert early in the course of every postoperative abdominal case, and to sense the approaching danger in order to prepare for action in advance.

The patient has perhaps had only the most meager allowance of food or even none for several days. A certain amount of starvation is present and he needs nourishment therefore, which must be given mostly by the intravenous route. Loss of body fluids is a vital loss which can be estimated as the hours pass by, and this must be replenished intravenously or hypodermically.

Body heat lost by fever, evaporation, sponge baths and cold applications has used up energy, and the patient is weak and prostrated and needs absolute rest and preservation of heat. The preservation of heat seems to me to be just as important in these toxic ileus cases as it is in the case of shock.

The patient is exhausted mentally and physically, tired almost to death, and his treatments should be timed so as to allow rest periods, assisted at times by hypnotics.

*Summary.*—Postoperative ileus, whether paralytic or obstructive, tends to produce a fatal toxemia or shock complex, the real nature of which is not yet understood.

A large number of these postoperative ileus cases are actual obstructions, due to localized peritonitis causing adhesive kinks.

There are a relatively small proportion of cases following operative irritation of bowel, rough handling and extra-abdominal injury, which are difficult to explain on any but a nerve-disturbance basis.

The higher the intestinal stasis the more toxic the obstructed bowel contents seem to be.

Early diagnosis of oncoming postoperative ileus is so important that in any postoperative abdominal case in which one or two enemas have not relieved, and where lavage is followed in three or four hours by further vomiting, a careful watch should be kept for a falling blood pressure, diminution of urinary output, absence or loss of chlorides in the urine, and blood studies, especially with reference to lowering of blood chlorides, increase of carbon dioxide combining power and increase of non-protein nitrogen should be made.

Undoubtedly many cases of postoperative ileus are averted or cured in the earliest stages by the timely administration of fluids, sodium chloride and glucose, before a definite diagnosis has been made, and thus go by unrecognized.

In the treatment, the replenishing of fluid loss is perhaps of first importance; the introduction of chlorides under the skin or into the vein is perhaps of next importance; the supplying of nourishing carbohydrates intravenously should also be done early; in fact, these three can be done simultaneously to great advantage, and must be repeated at definite intervals throughout the illness, no matter what further treatment may be found necessary. The intestinal contents as they regurgitate into the stomach should be repeatedly removed by lavage, or by retained duodenal tube, or if relief is not produced after a few hours' repetition of these procedures, the distended abdomen should be decompressed, preferably by high jejunostomy, or if the ileocecal region is strongly suspected of causing the obstruction due to operation for appendicitis, then the operative wound can be reopened and a cecostomy tube inserted.

If conditions improve after these procedures, but obstruction of the bowels still persists, further operation may be indicated to find and relieve the obstruction.

Rest can best be obtained by relief of the abdominal distension but also by grouping different relief-procedures systematically so as to allow definite rest periods.

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## THE HEALTH ANGLE IN ADVERTISING

The physician has become a prophet in the land, and health is the word with which one conjures. Regardless of the substance to be advertised, the agency goes forth in search of medical opinion with which to vaunt it. A soup is sold with the claim, "There is health in every spoonful." Of certain toilet accessories it is said, "Your doctor will advise against harsh, rough papers." Certified milk is called "health bottled in bond." And so it goes. The doctor's advice has been sought, it seems, for many of the most mundane affairs of human existence. The difficulty of evaluating advertising copy in these modern times is an evidence of the changing situation. The modern agency supports by evidence the claims for the products promoted. The presentation of such evidence often seems an exaggeration of conditions as they are, yet the evidence is almost invariably actual. No doubt physicians have been too ready to accept broad generalizations in the field of hygiene. They seldom require the same kind of evidence in support of a cleansing agent, dietary product or tobacco that they demand in support of a new remedy. Hence the promoters are easily able to secure the necessary number of medical endorsements. Fortunately the situation may take care of itself: the overdoing is certain to result in reaction. But if the great minds in the advertising agencies are wise they will begin to reconsider now. Otherwise the good is likely to be lost with the evil. (*Jour. A. M. A.*, December 24, 1927, p. 2195.)

## THE VIAVI FAKE

For years there has been exploited throughout the United States a piece of quackery known as "Viavi." The business was founded by two brothers, Messrs. H. and H. E. Law, San Francisco. Viavi is not the name of a single preparation; it is a generic name given to a long list of nostrums put out by the Viavi Company. Practically all of the preparations are sold for the alleged alleviation and cure of diseases peculiar to women. The basis of most of the Viavi preparations seems to be golden seal. Some years ago the California State Journal of Medicine published a detailed exposé of the Viavi quackery. In general Viavi had not been advertised to any extent in newspapers. However, immediately Viavi advertisements appeared in all the San Francisco papers and no further newspaper criticism appeared. A physician reports the case of a woman with unmistakable evidence of cervical carcinoma of several months' standing. The history of the case was that the young woman, some four months previously, instead of going to the family physician, fell into the hands of the the local Viavi agent. Finally the Viavi people told the woman she had cancer and recommended that the sufferer go to Detroit and take the Koch treatment! Before the poor woman could decide what to do, the lesion ulcerated into an artery. The family physician writes: "Four months ago there might have been a chance to save the life of this young mother; today, the case is practically hopeless." (*Jour. A. M. A.*, December 3, 1927, p. 1983.)

## ACUTE APPENDICITIS IN YOUNG CHILDREN\*

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APPENDICITIS continues to be discussed because it still carries a mortality which may be considered largely preventable. In spite of the fact that acute appendicitis presents a fairly characteristic syndrome, the diagnosis remains in doubt in many cases, and, as a consequence, fatalities occur with relative frequency.

The diagnosis of appendicitis in children is peculiarly difficult. The classic picture of abdominal pain, localized in the right lower quadrant, accompanied by nausea, emesis, slight fever, and the objective symptoms of tenderness and rigidity over McBurney's point, unfortunately are often absent. In children aged five years and more the absence of some of the classic symptoms or signs may raise doubt in the mind of the physician, although usually an accurate diagnosis is possible. In older children, as in adults, the question of differential diagnosis arises, although the number of probabilities to be considered is perhaps smaller.

In young children the problem becomes difficult since scarcely any information may be gained concerning the subjective symptoms, and that which can be obtained objectively is limited by the difficulties of making a satisfactory examination.

Acute appendicitis in children offers too broad a field for complete discussion here, therefore only a few suggestive points can be touched on, which principally concern children aged five years or less. Appendicitis at this age is not rare. Many cases have been reported in children aged less than two years. It is extremely significant that in these reports the majority of the diagnoses were made after death. In a group of 288 cases in children, seen in the Mayo Clinic during the last three years, the incidence according to age is shown in Figure 1. Distribution of the acute and subacute cases according to years is practically the same. It is only when the chronic cases are included that the increasing frequency after five or six years of age becomes evident.

At present it is generally agreed that the treatment of early acute appendicitis consists of immediate removal of the diseased organ. The difficulty in diagnosis becomes apparent when one considers the number of appendices that perforate before treatment can be instituted. With perforation and consequent peritonitis, the outlook becomes more grave, the illness is prolonged, and the mortality is increased.

If one compares the incidence of acute appendicitis according to years with the occurrence of perforation according to the age of the child, it is readily seen that perforation occurs more frequently in the earlier years, in inverse ratio to the age of the patient (Figure 2).

The mortality rate for the entire group is 2.25 per cent, which compares favorably with the percentage of 2.5 in a similar group reported by Bolling. Although death occurred only six times in the group discussed here, rupture necessitated a prolonged stay in the hospital whenever it occurred.

It is important to consider the causes which bring about perforation and death from acute appendicitis in these children, in an effort to prevent such unfortunate results from a disease for which there is a cure if treatment is instituted in time. It is delay, particularly, which accounts for the accidents. Older children can describe pain and other subjective symptoms dependably. In the younger children this important aid in diagnosis is lacking; consequently appendicitis frequently proceeds to perforation with resultant peritonitis or abscess formation before the true condition is suspected.

### SYMPTOMS

*Pain.*—Pain is probably always present in appendicitis, but in the young child is likely to be interpreted as stomach-ache which will disappear, especially if a cathartic is given, a practice condemned by most thinking members of the profession. It is often impossible to determine the situation of the pain. Indeed, the little patient may indicate that it is in an entirely different part of the body. Often one must be satisfied with the knowledge that the child has pain.

\*From the Section on Pediatrics, Mayo Clinic. Read before the Northern Minnesota Medical Association, St. Cloud, Minnesota, September 12-13, 1927.

*Nausea and emesis.*—Young children vomit more easily than older children and usually do so at the onset of an acute infection. Since there is nothing characteristic of the emesis it is of little help in diagnosis. The relation of emesis

mining whether the palpating hand meets involuntary resistance or causes pain on pressure. If there is tenderness the child will cry or make resistance; if there is none, he will cry no more loudly. The presence or absence of rigidity is

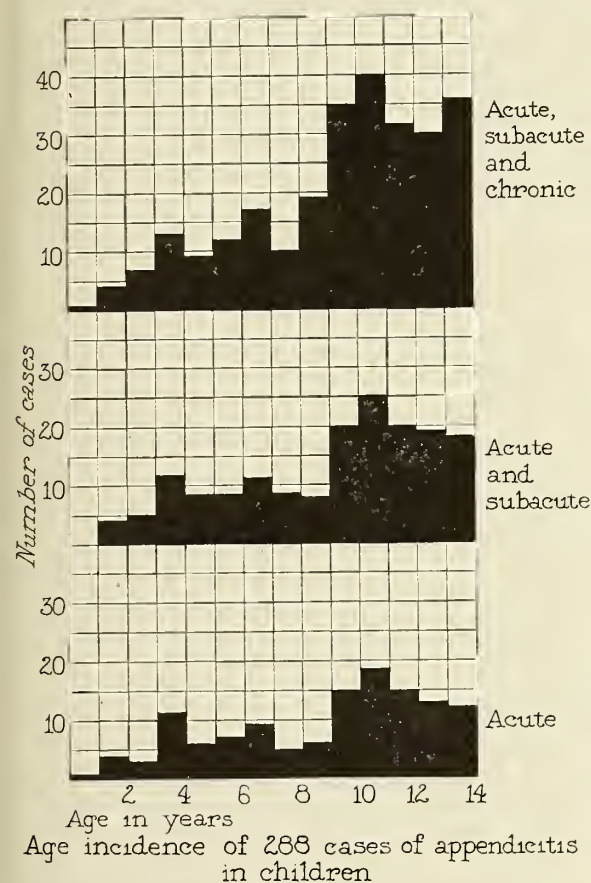


Fig. 1.

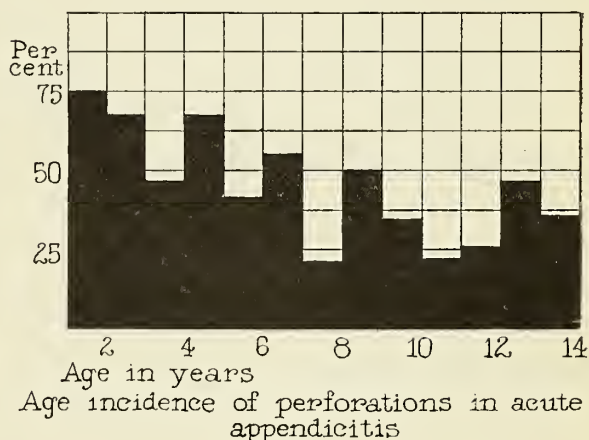


Fig. 2.

determined by comparing the tension of the lower ends of the rectus muscles. If both tenderness and rigidity are present there is sufficient evidence to justify exploration. The location of the point of maximal tenderness, although subject to considerable variation, is of importance. In general, the appendix is situated higher in children and in not a few is retrocecal, which accounts for the lack of uniformity in the point of tenderness. Tenderness is frequently not extreme; in many instances it can be elicited only by deep palpation; however, if difference is noted in palpating the two sides of the abdomen, the evidence must be considered positive for appendicitis. In an occasional case, tenderness will be found, only to disappear in a few hours. On the other hand, it may increase and if, in addition, the area of tenderness becomes larger there is reason to suspect rupture with peritonitis.

*Rectal examination.*—Besides localized tenderness in the right lower quadrant of the abdomen, tenderness on the right side on rectal examination is of utmost importance. The difficulty encountered in making a satisfactory abdominal examination in a young child is usually not so great as the difficulty of making a rectal examination and consequently the latter requires even greater confidence from the patient. Here, too, a comparison between the two sides must be made. Practically every child will object to the discomfort when the examining digit is intro-

to pain may, however, be of great importance. Emesis which does not relieve pain is always suggestive of peritoneal irritation or inflammation of an abdominal viscus.

*Fever.*—Fever is usually present and is characteristically low. Rectal temperatures of more than 102° are seldom encountered except in cases of peritonitis following perforation of the appendix.

*Tenderness and rigidity.*—Tenderness and rigidity constitute the most dependable indications of acute inflammation of the appendix in young children. Those who have attempted to examine well children realize that it is difficult to elicit these signs without the coöperation of the child and that patience and perseverance are required. However, one is well repaid for the time spent in gaining the confidence of the child and deter-

duced into the rectum, but if there is inflammation in the right iliac fossa or at the pelvic margin, the increased tenderness on the right side will be evident.

*Blood count.*—The leukocyte and differential blood counts are usually an aid in diagnosis, especially after other acute infections have been ruled out by the general examination. Seldom is the leukocyte count less than 12,000. If, besides leukocytosis, the polymorphonuclear cells are above 80 per cent the evidence of acute infection becomes strong.

#### DISCUSSION

Several times in the last few years I have encountered a condition which presents the clinical syndrome of acute or subacute appendicitis with definite tenderness and more or less rigidity in the right side of the lower part of the abdomen. At operation the appendix has been found to be inflamed in about 50 per cent of the cases. In the others the appendix has been practically normal, but the mesenteric nodes, especially the ileocecal node, have been enlarged. On microscopic examination there was evidence of hyperplasia and inflammation. This is not an original observation, but it is important enough to deserve mention as it will account for the diagnosis of appendicitis in some cases in which the appendix appears to be almost normal at operation.

If all cases of acute appendicitis could be recognized and treated in the first twelve, or possibly twenty-four, hours after onset, few deaths would occur from this disease. Abdominal pain and tenderness are the chief warnings of trouble and when they occur in older children receive more or less prompt attention. In the younger child the tendency on the part of the parent and physician is to minimize the significance of the

stomach-ache and, because they do not suspect appendicitis, they delay examining for it. The result is that the diagnosis is frequently made only after perforation, peritonitis, and even death have occurred. The conception that appendicitis develops more rapidly and proceeds to perforation more quickly in young children is probably only half true. Less than one-fourth of the children five years of age or less with acute appendicitis were seen in the first twenty-four hours; a diagnosis was not made before two days in a larger number and more than a third were not brought for treatment until after the second day.

#### SUMMARY

Appendicitis carries a mortality which can be decreased by early diagnosis and prompt treatment.

Acute and subacute appendicitis occur at all ages, and in young children nearly half as often as in older children.

In young children the diagnosis is particularly difficult, chiefly because of the patient's inability to describe subjective manifestations and because of difficulty in making a satisfactory examination.

Perforation occurs in young children from a third to a half again as often as in older children.

Tenderness and rigidity are of most significance in very young patients.

Enlarged, inflamed lymph nodes may simulate acute appendicitis.

If a child has an acute complaint, referable to the abdomen, acute appendicitis should be suspected, the child watched closely, examined carefully for evidence of a diseased appendix and treated promptly when positive signs are found.

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## THE MIGRATORY CONSUMPTIVE PROBLEM\*

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THE purpose of this study is the consideration of the problem of the non-resident consumptive as it affects the sanatorium serving the largest community in this state. It will include an attempt to adjust the conflict which exists between the laws defining those who are eligible for admission to a county sanatorium and the humanitarian and public health aspect of the problem; as well as a consideration of the burden that the care of the non-resident places on any community.

The linking of climate and disease in the mind of man is as old if not older than the history of medicine. The ancients<sup>1</sup> believed that certain climatic conditions produced certain types of diseases, while other climatic conditions produced a curative effect upon the disease or prevented its development entirely. Now we know that the development of these diseases depends not upon the climatic conditions but upon the presence of certain germ-bearing insects. Where these insects cannot live the disease does not develop, and when these insects are exterminated the disease dies out. Gradually climate has come to occupy a less important place as a curative factor in the development of certain diseases.

Tuberculosis was one of the diseases which the ancients associated intimately with climate. The fact that when a new land was discovered, no evidence of tuberculosis could be found, led to the belief that there were certain localities where tuberculosis could not develop. However, tuberculosis appeared soon after the advent of the white man, proving that these localities which had been free from tuberculosis were merely localities which had not made contact with the tubercle bacillus rather than "immune areas." This fact apparently had no influence on common opinion because even as late as the middle and latter part of the 19th century Brehmer,<sup>2</sup> the father of the sanatorium treatment, recommended that all sanatoriums be located in so-called "immune areas." Some considered that

altitude was all-important, and for others the sea coast was the favorite spot. Laennec<sup>3</sup> was so impressed by the beneficial effect of sea air that he attempted to create an artificial sea atmosphere in his hospital wards.

In the long ages which have passed since the beginning of medical practice, the value of climate in the treatment of tuberculosis has been so impressed on the mind of the layman that he firmly believes that, if he can only reach the elusive, tantalizing, and not-to-be-found Fountain of Perpetual Youth, personified in an ideal climate, he will recover from his tuberculosis. For this, man will give up his family, friends, and established life, and expend large sums of money to migrate thousands and thousands of miles in the hope that his life may thus be prolonged.

With the development of the sanatorium method of the treatment of tuberculosis, another factor was added to that of climate as a cause of the migratory consumptive problem. This factor was the faith in a certain sanatorium, and the belief by the individual that if he could only get into that sanatorium or under the direction of the physicians of that sanatorium he would get well. Such a faith was responsible for the development of the tuberculosis colony which has grown up around Trudeau Sanatorium, near the village of Saranac Lake, New York. These two causes then, climate and sanatorium care, are the foundation of the migratory problem of all communities.

The popularity of Minnesota as a health resort for tuberculosis is not new. Men who are familiar with the early history of Minneapolis state that in the early days nearly every house had its boarder, and, according to some, "the dry air of Minnesota in 1880 was responsible for the increase in population in Minneapolis in three years from 47,000 to 75,000." The popularity of Minnesota's climate for the tuberculous is now surpassed by that of the Southwest, but other factors have taken its place, which continue the problem and even increase it.

The first factor is our large floating popula-

\*Presented before the Minnesota Hospital Association in Duluth, June 25, 1927, and the Minnesota Sanatorium Association at Granite Falls, Minnesota, July 14, 1927.

tion. Minneapolis is conceded to be one of the largest labor markets in the country. This creates a large floating population which, while not strictly resident in the terms of the law, considers Minneapolis its headquarters. These individuals earn their money elsewhere and spend it in Minneapolis. They contribute something to Minneapolis, and, therefore, are entitled to something in return. This something is the advantages of the hospital facilities which the community affords. Whether the contribution these people make is valuable enough to warrant this care may be questionable, but as long as the community accepts the contribution it should be willing to render the care.

The second factor is the Minnesota sanatorium system, which is one of the best in the Union. It is composed of one state sanatorium and fourteen county sanatoriums located at various parts in the state and varying in size from thirty and forty beds in the smaller centers to seven hundred beds in the largest community. All attract people who are in need of sanatorium treatment for tuberculosis from the surrounding communities.

These two factors, the large floating population in Minneapolis, and the facilities which the largest sanatorium in the state affords, make up the migratory consumptive problem of Minneapolis. The details of this problem pertain to one sanatorium but the broad general principles apply to all county institutions.

The migratory consumptives can be divided into two classes.

One class includes those who are residents of the state of Minnesota and of the sanatorium district but who enter the sanatorium in the fall and leave it in the spring only to reenter in the fall. These do not present a difficult problem as they are residents and should receive the same consideration as any resident with respect to place on the waiting list, the stage of the disease, and the admittedly better ability of the sanatorium trained individual to continue home treatment with all that that implies, than a non-sanatorium trained individual, both from the personal and the public health point of view. This is easy of solution and will not be considered further in this paper.

The other is the non-resident group. This group may be divided into two sub-groups;

(a) the well-to-do who can be hospitalized in a private hospital, and (b) the person in less fortunate circumstances who has to be hospitalized in a public sanatorium. No problem arises in the hospitalization of the well-to-do man in a private hospital as long as his funds are ample. But when he is no longer able to pay the hospital bill and support his family, if he has one, the question of care in a public institution and relief for his family or the deportation back to his former community arises. In attempting to solve this an effort should be made not to break up the family. Therefore, the man and his family should be treated as a unit, and either cared for or else deported. As long as a man is independent we grant him the right to live, to earn his bread, and to educate his family where he wishes, but that right is justly questioned when he becomes a burden on the community, as he does when he enters a public institution. But the urge to get well is as strong in the poor as in the well-to-do, and each one, rich or poor, will go where he thinks health is available, whether the lure be climatic advantages or hospital facilities.

#### THE CARE AND TREATMENT OF NON-RESIDENTS IN A PUBLIC INSTITUTION

As the sanatorium system of Minnesota includes a State Sanatorium as well as county institutions, no discussion of the care of non-residents in a public institution would be complete without considering the State Sanatorium and its relation to this program.

Admission to the State Sanatorium is limited to residents of the state, as defined in Section 3161, General Statutes of 1923, who have incipient or favorable tuberculosis. This law defines a resident of the state for the purposes of hospitalization in a public institution as one "who has lived in the state for at least a continuous year immediately prior to hospitalization, in absolute independence and without aid or support from the community." This law further specifies that "each month any aid is received or each month that the individual is an inmate of a hospital, insane asylum, or other public institution, shall be deducted in determining the time of residence." This law is a clear recognition of the principle that each state should care for its own dependents and should not pass the burden of the erection and the maintenance

of tuberculosis sanatoriums on to other states. It is also a recognition of the contention that when an individual needs care in a public institution it should be given by the community to which that individual has contributed something by living or working rather than a new community to which he has come for a special purpose. If a community did not safeguard itself in this manner, where would the demand for hospitalization end? How many public sanatorium beds would that community have to provide and how large a burden would such a program place on the tax-payers? The question is frequently asked, "But if I pay cannot I then be admitted to the public institution?" Of course, a state in self-defense could erect enough beds to care for all of its bona fide residents and provide for individuals of a sister state, who would be admitted upon a pay basis which would cover the maintenance of such institutions, including the interest on the money invested. This, however, would be an encroachment on the prerogatives of the private sanatoriums, such as the two excellent ones that we have in the state of Minnesota. Therefore, it seems to me that it is unnecessary and should not be done.

Thus the state has theoretically and practically no non-resident problem. The law limits admissions to the residents of the state as defined above and the poor relief is on a city or county basis. If the State Sanatorium refuses a case, the burden falls back on the county, and there it has to be solved. The sick, homeless, destitute man or woman must be cared for.

#### THE CARE OF THE NON-RESIDENTS IN A COUNTY SANATORIUM

Because of state aid, the County Sanatorium Law provides that the county sanatoriums, while giving preference to the advanced cases, shall first care for the residents of their own sanatorium districts, and, if any vacancies then remain, residents of other counties may be admitted upon a non-resident basis. This is the payment of a certain weekly charge, the exact amount being determined by the state supervising body. A county resident, as defined in Chapter 15, Section 3161, General Statutes of 1923, is "a person who has resided one year continuously in any county . . . or, if he

has only resided one continuous year in the state, he shall have a settlement or residence in the county in which he has longest resided within such year." In addition this time must have been spent in absolute independence and outside of a hospital, as in the State Law. Also, "the residence of a minor, unless he is independent in his own rights, is with his parents."

Thus, for the purposes of public hospitalization it is impossible to acquire residence in any community by spending the required period of time in a hospital. Residents of the state who are not residents of Hennepin County may be cared for in Glen Lake Sanatorium or in any other county sanatorium in the state, provided there are vacant beds and no residents of the sanatorium district on the waiting list, upon the payment of \$19.25 per week, the amount fixed by the State Board of Control for the care of such non-residents. In addition, Section 726, of the General Statutes of 1923, authorizes and empowers the various county boards "to appropriate money out of the general revenue funds of the county . . . for the care, support, and maintenance, of poor persons who are afflicted with tuberculosis." As the law does not specify where this care, support, and maintenance must be given, the Attorney General's office has interpreted it to mean that such care may be given in any sanatorium or hospital, public or private, in the state of Minnesota, wherever there happens to be a vacancy. One county has hospitalized about twenty-five patients in two general hospitals in its community, and Hennepin County through Glen Lake Sanatorium has hospitalized patients in a private sanatorium during the winter of 1926 and 1927. Also, in 1925, the state passed a law (Chapter 213) to the effect that individuals who have not resided in any one county in the state long enough to establish a residence in any county could be admitted to the State Sanatorium or to any county sanatorium at the expense of the state, and the cost of hospitalization of such a person would be paid out of State Aid funds.

With such careful laws defining eligibility for the care and treatment of a tuberculous individual in a county sanatorium at the expense of the taxpayers of that county, and for the provision of hospitalization of residents of other counties in the state, either at the expense of their own county or at the expense of the state, theoretic-

cally there should be no migratory consumptive problem in any county sanatorium district.

However, during the past three years, or since Glen Lake Sanatorium has assumed the hospitalization of all of the tuberculous in Hennepin County, through an agreement with the Board of Public Welfare of Minneapolis, our migratory consumptive problem has increased. During that period we have had 123 applications of non-residents who under the law were not eligible for treatment here.

other cases lived in an adjoining county which did not maintain a sanatorium. They were too far advanced to go to the State Sanatorium and so they were given temporary care at Glen Lake Sanatorium from the humanitarian point of view. Later, arrangements were made to transfer them to a private sanatorium where they are now cared for at the expense of their own county under the laws referred to above. Twenty of the cases were admitted because of the unfavorable home conditions, or because of the public

NON-RESIDENT APPLICATIONS

Rejected		Admitted		Waiting	TOTAL
Out of County	In County	Minn. Resident	Other State		
74	4	18	15	12	123

Table 1

Of that number, seventy-four who were not in the county at the time of application and four who were residing here temporarily were rejected. However, Glen Lake Sanatorium was forced, for various reasons, to admit thirty-three of the non-residents, and there are twelve still on the waiting list. The problem is, what to do with the thirty-three and twelve, or a total of forty-five non-residents. Of the thirty-three admitted, eighteen were residents of other counties in the state and fifteen were residents of other states or countries. All were definitely non-residents and should have been cared for by their own community.

In analyzing these cases the entire thirty-three will be considered as a group, with an occasional reference to special groups or cases. Three lived in hospitals in the city of Minneapolis for over a year and would not now be admitted under that basis. In six cases the family moved here with the idea of establishing a permanent residence and lived in the county from six weeks to nine months before admission. One of the six sent her children here after the death of her husband and she herself purchased a home in Minneapolis, thus declaring her intent to make this, rather than the town of her previous residence, her future home. One was a minor whose father lived here six years prior to the child's admission to the United States, and one case had been employed at the Sanatorium for six months. Two health problem which their residence in this community presented.

When the family moves here and establishes a home, thus declaring its intent to make Minneapolis or Hennepin County its future residence, we will have to admit the sick one. According to common opinion, the children of such families are entitled to the educational advantages the community has to offer. The question naturally arises, should they not also be entitled to the

REASONS FOR ADMISSION TO GLEN LAKE

3

Hospitalized in other hospitals in Hennepin County for 12 months or more.

6

Family moved here and established a home.

1

Minor whose father lived here.

1

Employed at the Sanatorium for 6 months.

2

Lived in adjoining Counties—given temporary care.

20

Admitted for Public Health reasons.

—  
33

Table 2

public health advantages? Some feel that our educational system should be of such a character that it will attract people from other communities to Minneapolis, but they believe that our hospital facilities should not be on such a high plane.

As the responsibility for the care of the residents of any county is clearly defined by the sanatorium laws, Hennepin County should be able to give emergency care to residents of other counties who are temporarily in Hennepin Coun-

ty and secure the proper authorization for transfer later. Actually, however, we have found that after giving temporary care the home county is much more loath to assume its just responsibility than if we refuse such emergency care. The following case illustrates our difficulty in this matter.

A woman born in Minnesota was married in one of the northern towns of the state. After nearly ten years' residence in the town, her husband developed tuberculosis and the family migrated to the Southwest, where two and a half years were spent in three localities in search of health. Finally the husband died in Arizona from a ruptured appendix and not from tuberculosis, and the wife and children returned to the town of their former residence, where the family was granted mother's or widow's pension by the county. After a few months the widow was found to be a case of advanced tuberculosis. Her children were placed in the Odd Fellows Home at Northfield, Minnesota, and she herself came to Minneapolis. As she was an advanced case with positive sputum she was admitted to Glen Lake Sanatorium for emergency treatment and immediate steps were taken to secure her transfer back to her own county, which operates a county sanatorium. To date, all attempts to transfer her to her county, which, by giving her mother's or widow's pension after she returned following the death of her husband, admitted that she was still considered a resident of that county, have been futile. The question naturally arises, has this woman lost her residence in her former county because of her sojourn in the Southwest? According to Section 3161, Chapter 5, General Laws of 1923, "a settlement for poor relief purposes in this state is terminated first by acquiring a new settlement in another state and second, by voluntary interrupted absence from this state for a period of one year with intent to abandon the residence in this state." The Attorney General's office has interpreted that to mean "that if a person leaves the state temporarily, even though for a period of one year, without any intention of abandoning his residence here and for the purpose of curing an ailment, that residence in this state would not be lost." Where was the intent to abandon residence in Minnesota in this case? There was none. The family left the state temporarily for a specific purpose and intended to return to the home town when the need for such a sojourn was terminated, either by recovery or death. One might debate the question as to whether this woman is entitled to care in Minnesota at all because of her sojourn in other states for a period of two and a half years, even in spite of the Attorney General's opinion. There can, however, be no dispute about the fact that Hennepin County has no responsibility in the case. She has never worked here, she has never lived here, and has never contributed anything to the support of Hennepin County; still for humanitarian and public health reasons it has assumed the cost of the care of this case. We should not have to continue it.

It was suggested that more accurate information concerning the residences of the various applicants could be secured if they were required to make out an affidavit. The Sanatorium received that idea with alacrity and then found a man falsifying on his affidavit. What was to be done then? Should the man be prosecuted for perjury?

A Mr. R. had lived in Minneapolis for a number of years when his two children developed tuberculosis. He moved to California. The boy died there; the girl recovered sufficiently to marry, and, following the birth of her child, had a relapse. The man then decided to return to Minneapolis with his family and take up his residence here again. In making application for his daughter, he perjured himself, and when the perjury was discovered he gave the following defense. "I was up against it. My money was gone, my one boy dead from tuberculosis, my daughter dying from the same disease, and I knew that if I told you the truth I could not get her into Glen Lake Sanatorium. However, I believe that I am justified in this because I have to support her and her husband and child. I have been a taxpayer for a long time and therefore I believe I am entitled to some consideration." This man, while he perjured himself, was doing it as a last resort in an attempt to secure care and treatment for his loved one at a cost which he could afford.

The law frequently refers to intent to abandon the residence or to establish a permanent residence in any given community. That intent can change with the tide and with the necessity as is well illustrated by the following case.

Things were not going well on the farm, and so a family decided to leave a farm, located in another state where the ill person had resided for about forty years, till farm conditions improved. They moved to Minneapolis, where they had many friends and relatives, and after about six months' residence the wife was discovered to be an advanced case of tuberculosis. Her friends and relatives claimed that she was eligible for admission to Glen Lake Sanatorium because she "intended" to make this her permanent home. Now that she is about ready for discharge she informs me that she is going back to her former state. What was the "intent" in this case? It was merely the subterfuge which she and her relatives used in order to secure her admission to Glen Lake Sanatorium.

Of the thirty-three cases admitted, three have had a residence in Minneapolis at some time, but while they have lost it, still their parents retained it. Naturally, when they became ill they wished to return to their former home. Seven of the thirty-three cases have never lived in Minneapolis, but had relatives living here and came to Minneapolis to receive hospitalization near their

relatives. This point is well illustrated by the following case.

A girl had lived in a certain town in Minnesota for eighteen years and then her family moved to Canada. While there she developed tuberculosis and was about to enter a sanatorium in Canada when one of her uncles in Minneapolis died. The family came to Minneapolis to attend the funeral and then decided to remain because of the health and educational facilities which this community has to offer. Whether this woman was a resident of Minnesota might be questioned, but there can be no dispute about the fact that she was not a resident of Hennepin County. If she should be cared for at all in Minnesota at public expense, it should be either at the expense of her former county or the state, and not at the expense of Hennepin County. When asked why she should be cared for in Hennepin County, she replied, "I have many relatives here who are taxpayers." Of course, the fact that her relatives were taxpayers of this community did not entitle her to care and treatment in Glen Lake Sanatorium.

If any county attempts to care for all of the relatives of its residents where will the load stop? How large will the Sanatorium have to become, and what will be the burden imposed on the taxpayers of the community?

The following table shows the length of residence of the thirty-three cases in the county and state.

Of the thirty-three cases admitted, three have been transferred to other hospitals or sanatoriums and are cared for there at the expense of their own county; two have died; two have left the Sanatorium either upon the advice of the staff or against it; and twenty-six are still being cared for at the expense of the taxpayers of Hennepin County, and all attempts at effecting a transfer have been unsuccessful. This makes Glen Lake Sanatorium all the more determined in the future to do all that it can to prevent the admission of non-residents even for emergency treatment. If Glen Lake Sanatorium had found that these people could be admitted and then transferred it would be very glad to render such emergency treatment and temporary care as is necessary, but when a transfer cannot be effected then the Sanatorium is very loath to admit them on any basis whatsoever.

#### THE BURDEN ON THE COMMUNITY

Two of the cases were paid for by their own county. These later were transferred to a private sanatorium. One of the thirty-three cases was a full pay case, paying twenty-one dollars per week; four cases paid from three to ten dollars per week; and twenty-six are free cases.

Residence in County		Residence in State	
Cases		Cases	
2	Not in county at all.	2	Life—later transferred to a private hospital.
2	6 weeks	1	18 to 20 years but lost residence by moving. Returned because parents lived here.
		1	33 years—out 5 years. Returned because married children lived here.
2	2 months	2	21 years.
4	4 months	1	35 years.
		1	25 years.
		1	Life.
		1	18 years, then out 5 years, and in state 4 months.
4	6 months	3	Life.
7	7 months	1	Born here—out 5 years.
		1	11 to 14 months.
		2	Life.
		1	26 years.
4	8 months	3	7 months.
		2	Life.
		1	8½ months.
		1	In and out for 10 years.
3	9 months		For life.
2	11 months		11 months.
1	13 months		13 months
2	14 months	1	14 months.
		1	Life.

Table 3

The cost of hospitalizing these non-residents in the Sanatorium does not represent their entire cost to this community. This, of course, depends upon the age, the sex, the civil and financial status of the individual, or upon whether the individual was the wage earner or the mother of the family. Two of the families have cost the community five hundred and thirteen hundred dollars respectively in addition to the cost of hospitalization.

Of the twelve non-resident applications on the waiting list, nine are residents of the state, either floaters in the state of Minnesota or with a well established residence in some other county, or are young people who are students at the University. Three of these are out-of-the-state residents, and present quite a problem. If the conditions become so acute that we are forced to take any or all of these cases, either because of the public health aspect or the humanitarian side of the problem, they will further complicate an already acute situation. If we have to admit them all we will have to hospitalize forty-five non-residents, which number would fill a small sized sanatorium. That number of beds released for the care of our own residents would aid materially in the care of our waiting list, which for the last two winters has averaged about fifty.

The next point to be considered in the migratory consumptive problem is that of the public health of the community. The indigent floater is usually ignorant, careless, and a danger to those about him. While he may not be legally a just charge of the county, still he is subject to the public health laws of the community in which he is living no matter where his legal residence may be. Also, since the sanatorium is supported by taxation, the welfare of the group is to receive precedence over the welfare of the individual. Therefore, if the health officer of any community requests that any non-resident be hospitalized, his request should be granted even if hospitalizing the non-resident excludes a bona fide resident from the Sanatorium. In attempting to adjust the public health demands of the community to the laws concerning the right of people to receive hospitalization in a publicly supported hospital, the social worker must use sympathy and understanding mingled with firmness in order to see that justice is received both by the non-resident and the resident who is applying for admission as well as the taxpayers who are supporting the institution.

*Summary.*—Eighteen of the thirty-three non-residents were admittedly residents of other counties in the state of Minnesota and fifteen were residents of other states. All of the eighteen who were residents of other counties could have been hospitalized at the expense of their own counties under the Sanatorium Law in any county sanatorium in the state wherever there happened to be a vacancy; or in any private hospital or sanatorium in the state under Section 732 of the General Statutes of 1923, if their counties had been willing to meet their obligation instead of passing it on to Hennepin County. As stated before, one county has hospitalized over twenty-five patients in general hospitals in its district, and Hennepin County has hospitalized some patients at a private sanatorium at the expense of the Sanatorium Commission. If other counties would do likewise there would be no inter-county non-residence problems. Fifteen of the thirty-three cases admitted, however, were residents of other states and this presents an entirely different problem. Each state is a unit by itself and has its own set of residence and poor laws. Furthermore, there is no law providing for coöperation between states as the county sanatorium law provides for coöperation between counties. This should be a problem for the entire state rather than for any one county and the state rather than any one county should assume the burden of either hospitalization or of the deportation of these cases.

#### RECOMMENDATIONS

1. That, except in the large counties, the county sanatorium system be changed to a district sanatorium system. This will extend the sanatorium facilities to more counties and at the same time increase the capacity of the present institutions.

2. The establishment of a strong central policy by the state supervising body which should include definite rules and regulations governing the hospitalization of these non-residents with the understanding that they will be strictly adhered to by each county.

3. The assumption by the state of the responsibility for the deportation of these non-residents as it has for the non-resident insane.

4. The erection of more infirmary beds at the State Sanatorium to enable the State to adequately care for its share of the migratory problem.

This might involve also a change in the State Sanatorium Law.

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#### WORLD HEALTH STATUS

On the whole, the first half of the fiscal year 1927 was characterized by unusually low death rates in foreign countries from which reports were received. In Germany, for instance, the 1926 urban death rate reached the low level of 10.3 per thousand. It is necessary to emphasize, however, that favorable mortality rates such as these do not prevail throughout the world. No view of the world health conditions is in perspective without proper emphasis on the mortality rates of India and Egypt, which are three times as high as ours, or upon mortality rates of certain cities and areas in Spain, Russia, and South America, which are double those prevailing in northwestern Europe, Great Britain and the United States. In most of the countries having higher mortality rates, however, the year was signalized by unusual freedom from epidemic diseases.

The most serious condition that interfered with the attaining of even lower mortality rates was the epidemic of influenza which affected the greater part of Europe in 1925-26. Slight epidemics of this disease following the increased prevalence in the winter of 1925-26 in the United States and elsewhere, had been reported in widely separated places, including New Zealand, the West Indies and South Rhodesia during June to November, 1926; in Denmark in September and in England in November. In March, 1927, the epidemic was practically at an end. While the cases were generally mild, the wide geographic distribution of the epidemic resulted in a gross mortality in Europe that was estimated by the Health Section of the League of Nations as not less than 100,000 deaths. Influenza was also epidemic in Japan and China, but apparently not in India or in Africa.

Cholera, still the scourge of India, did not greatly diminish there, and appeared with much more than usual prevalence in countries eastward as far as Korea and Manchuria. A severe epidemic occurred in Siam in 1926, reaching its peak in July. In China cholera was present at various periods during the year in most provinces, and epidemic in a number of localities. The most serious epidemic in a port was at Shanghai, where more than 1,200 cases were reported in the international settlement from the latter part of July until the middle of September, 1926.

It is significant that yellow fever was confined to one section of the continent of Africa. Cases were reported on the Gold Coast, Nigeria, Liberia, Senegal, the upper Volta, French Sudan, Togoland, and Dahomey. The

disease was more prevalent on the Gold Coast during the first half of 1927 than for six or more years. With the exception of one case, which occurred at Bahia, Brazil, July 4-10, 1926, the disease was not reported in the Western Hemisphere during the year. This highly satisfactory condition is of the greatest importance to all of the American republics.

While devastating epidemics of typhus fever which swept Russia after the World War have definitely passed, that country and the countries on its western and southern borders still constitute an area in which the disease is epidemic. Some increases in incidence of this disease were also reported on the North African coast, especially in Algeria. The decline of typhus fever incidence in Chile since 1920 continued during the past twelve months. Sporadic cases were reported in Mexico. In the Irish Free State a slight epidemic of 24 cases was reported in April, last. However, there has been no marked spread of the disease from any of its endemic centers in any part of the world during the year 1926-27.

Small pox has markedly decreased in continental Europe. Even in Spain, where the death rate from this disease has been high, a definite improvement has been evident. In England and France, however, a mild type of the disease was more prevalent than in the preceding year. Whether the mild type of the disease will supplant its severe form, or the severe form will spread where neglected vaccination exists, it is impossible to say. The fact remains that smallpox is endemic throughout the world, and indubitable evidence accumulates from countries where vaccination is enforced, that the disease in any of its forms can be prevented by vaccination.

Diphtheria, scarlet fever, measles and whooping cough have not manifested an unusual prevalence during the past year, except a somewhat higher than normal incidence of scarlet fever in Poland, Germany and the Netherlands.

Available statistics of tuberculosis mortality in the larger European cities indicate a decline in the tuberculosis rate in 1926. The decrease in deaths in 1926 and 1925 in a considerable group of widely separated cities in Europe was 7.5 per cent. The decrease in German towns since 1923 has been remarkable, the tuberculosis death rate in 1926 being 99 per 100,000. While increases in the tuberculosis death rate in several Spanish cities, Manila and Bombay were in sharp contrast to this rate, the general trend of the disease is encouraging abroad, as well as in this country.—U. S. Public Health Service.

## THE PREPARATION OF PROSTATIC PATIENTS FOR OPERATION\*

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IF an excuse is necessary for presenting this paper, it is found in the fact that some internists still attempt to relieve the constitutional symptoms produced by hypertrophy of the prostate by massage of the organ.

The constitutional symptoms of hypertrophy of the prostate are not produced directly by the pathological prostate, but by faulty elimination on the part of the kidney. Likewise, the danger of the operation for relief of the condition is not found in the field of operation, but in the effect the operation has on the function of the kidneys.

Removal of the cause has become an axiom in medicine. Students are taught to find the cause of symptoms and to remove it promptly. This does not hold good in the treatment of hypertrophy of the prostate. Here prompt removal of the cause leads to disaster. The constitutional symptoms of the condition must be removed or ameliorated before the cause can safely be removed.

The constitutional symptoms of hypertrophy of the prostate are those of chronic uremia. The condition which we call uremia occurs in two types. One accompanies diseases of the kidneys; the other is the result of faulty kidney action due to back pressure of the urine in the kidney pelvis caused by some pathological condition in the lower urinary tract. Each type occurs in an acute and chronic form.

Acute uremia following kidney diseases is characterized by nausea, vomiting, restless delirium, unconsciousness, and convulsions; the chronic form by headache, nausea, vomiting, variable appetite, disturbances of the heart and respiration, loss of vision, edema of the eyelids and extremities.

The symptoms of chronic uremia following back pressure in the kidney pelvis are loss of weight and strength without apparent cause, disturbances of the digestive tract, dry tongue, increased thirst. These patients are pale and have

the appearance of being worn out. This is the old man who is treated for chronic interstitial nephritis. The acute form is brought on by the sudden removal of the back pressure in the pelvis of the kidney. The patient has no pain of any kind. He is sleepy and if aroused will say that he is tired. His tongue is dry and there is not simply loss of appetite but an aversion to food. Diarrhea may be present. Slight twitching of the muscles may be noticed but convulsions rarely or never occur. Death occurs in six to ten days. These patients simply sleep their way into the next world.

The fact that these two types are so different might lead one to suspect that possibly they are not caused by the same toxic substance. As a matter of fact the toxic substances which cause uremia are not known. Surgeons placed great importance on the high urea-nitrogen content in the blood of prostatic patients. In view of the fact that patients in apparently good health are found to have high urea-nitrogen content in the blood, and that patients have died of uremia, whose blood showed a normal amount of urea-nitrogen, is it not possible that the importance of this finding has been overestimated or at least misunderstood?

In order to understand why residual urine develops, we must have a reasonable knowledge of the physiology of the emptying of the bladder as well as the knowledge of the pathology of its outlet.

Normally, the urethral outlet is the lowest point of the bladder. When the bladder is full it is almost spherical in shape, but as it becomes more or less completely empty, either the top falls in, leaving a concave upper surface, or the posterior wall drops forward, leaving a concave posterior surface. When the prostate hypertrophies, the internal meatus is raised up, or if the posterior wall of the prostatic urethra is lengthened it may be raised, and at the same time tip forward. If the internal meatus is raised up and the upper wall of the bladder drops down, it may close the outlet completely

\*Read before the annual meeting of the Northern Minnesota Medical Association, St. Cloud, Minnesota, Sept. 12 and 13, 1927.

like a valve. If the posterior wall of the urethra is lengthened, and the meatus tipped forward, pressure of the wall of the bladder comes on the posterior margin of the meatus, firmly closing the urethral opening.

Loss of muscular strength is a factor. The bladder muscle has lost its strength in proportion as the other muscles of the body have lost their suppleness. It is no longer able to contract firmly enough to force the urine to pass even a moderate obstruction. That this weakened bladder is really a factor is demonstrated by a case recently in the University Hospital. This patient was admitted with a diagnosis of acute cystitis. Examination showed that he had a hypertrophied prostate. On catheterization it was found that he had no residual urine. After a few days rest in bed and treatment his cystitis cleared up. He was again catheterized and found to have 100 c.c. of residual urine. It required the stimulation of the acute inflammation of the bladder to produce contraction of sufficient strength to expel the urine.

The development of residual urine is due to four factors:

1. Obstruction.
2. Altered position of the bladder outlet.
3. Valve-like action of the bladder wall on the internal meatus.
4. Muscular weakness of the bladder due to the age of the patient.

Whenever the residual urine in the bladder has reached the amount of 100 c.c. the increased intra-vesicle pressure causes a damming back of the urine in the pelvis of the kidney. How long the kidney can functionate normally against this back pressure we do not know, but sooner or later the pelvis becomes dilated, the pyramids flatten and the calices broaden. This compression on the medullary portion of the kidney throws the urinary tubules which it contains out of their normal position. They no longer eliminate the normal amount of organic waste nor do they resorb the excess amount of water poured out in Bowman's capsule. As the result these patients pass large quantities of low specific gravity urine. After a longer or shorter time, depending on the resistance of the kidney to pressure, symptoms of the chronic uremia slowly make their appearance.

Prostatic patients come to us seeking relief from two sets of symptoms: (1) difficulty of

urination, that is, obstruction; (2) obstruction plus chronic uremia.

The permanent relief or cure of the symptoms of hypertrophied prostate is accomplished by operation only. The obstruction which prevents complete emptying of the bladder must be surgically removed. This is true notwithstanding the reported cures by the use of diathermy, x-ray, etc.

The urine of the man who complains of obstruction only will be found, no matter how much residual he may have, to be normal in amount and specific gravity. His blood chemistry will be normal.

The preparation of this patient for operation is a simple matter. He should be catheterized four or five days, once a day, then twice a day for the same length of time, and should wear a retained catheter for approximately a week. Only occasionally will one of these patients become uremic from emptying his bladder. If he does, it will not be serious. Withdraw the permanent catheter or stop the catheterization and in a few days his uremia will have disappeared and the catheterization can be begun again. The fact that this man's urine is normal in amount and specific gravity is positive proof that his kidneys have not been damaged.

The man with chronic uremia presents a much more serious problem. His general health has been undermined. In cases of long standing he may be almost a physical wreck. That his kidneys have been injured by the back pressure is shown by the large quantity of low specific gravity urine which he passes.

It is safe to empty his bladder once to estimate the amount of residual urine he is carrying but if the bladder is completely emptied daily there will be a progressive increase in his uremia and decrease in the amount of urine passed.

Restoring the back pressure to this man's kidneys by stopping catheterization may or may not relieve the acute symptoms. This will depend upon the amount of injury the kidneys have received. If the damage is slight he may recover but if the medullary portion of the kidney has been badly damaged by the long continued back pressure the uremic symptoms increase and the amount of urine lessens until death occurs in from six to ten days.

When back pressure in the pelvis of a kidney that is still able to excrete normal urine is sud-

denly removed the kidney becomes the seat of a passive congestion which is transitory provided the back pressure in the pelvis of the kidney is promptly restored. When the back pressure is suddenly removed from the pelvis of a kidney whose tissues are so badly compressed that it is no longer able to excrete normal urine, we have in addition to the passive congestion the expansion of the compressed tissue.

The medullary portion of the kidney is compressed so slowly by the increasing back pressure that the urinary tubules which it contains are able to adapt themselves to their new position. Their function is faulty but is sufficient to support life. When the pressure is suddenly removed the expansion of the compressed tissue is so rapid that the tubules cannot adapt themselves to the change and the patient dies of uremia.

The uremic man is prepared for operation by the judicious use of the catheter.

The elements which bring success are time and caution. The bladder should be only partially emptied daily, enough urine withdrawn to relieve but not remove the back pressure in the pelvis of the kidney. The amount of urine withdrawn is gradually increased until the bladder

can be completely emptied. This allows the compressed kidney tissue to expand slowly. The urinary tubules not only retain but increase their function.

Under this treatment the uremia slowly disappears. The amount of urine excreted is reduced and its specific gravity increases. How near the urine will return to normal amount and specific gravity depends on the amount of permanent damage the kidney tissue has sustained.

The length of time required to decompress the kidney depends on the physical condition of the patient and the judgment of the surgeon. After it has been proven that it is safe to empty the bladder daily, the patient should be catheterized twice a day. Later, depending on the judgment of the surgeon, a permanent catheter should be inserted.

As far as the danger of uremia is concerned any patient whose bladder has been drained by a permanent catheter for ten days without increasing his uremic symptoms can be safely operated.

In our opinion it is wise to let the uremic patient make a long preoperative convalescence. It is better to use the catheter a month too long than to operate five minutes too early.

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## CARDIAC NEUROSIS\*

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CARDIAC neurosis is an extremely interesting and important phase of medicine and one that often does not sufficiently arouse the interest and compassion of the medical profession. The physician's failure to meet the problems of these patients properly has done much to encourage the various irregular healing cults to which many patients drift in their journey, seeking relief. During the years of the World War medical literature teemed with articles dealing with "neurocirculatory asthenia," "soldier's heart," "effort syndrome," and many other descriptive terms which brought to the attention of the medical profession functional disturbances of the heart. These states, like other war-time conditions, are now apparently considered passé, since so little attention is accorded them in civil practice.

The mechanism responsible for the precipitation of cardiac neurosis exists in everyone and its occurrence or non-occurrence is fundamentally a psychologic consideration. From early childhood the human mind is indelibly impressed by certain things regarding the heart. Every child knows that the continuance of life is dependent on the beating of the heart. As the child's age advances, these early and vivid impressions are carefully nursed by the universally accepted phrases of the world's brilliant poets, authors, orators and other intellectual celebrities, who, in moments of emotional outburst, refer to the heart as the seat of love, as the seat of the soul, as the seat of generosity, and so forth. It is almost impossible to read modern fiction or to witness a theatrical production, legitimate or otherwise, that does not metaphorize despair or unhappiness by allusions to the broken heart. These are but a few examples of what the art of synthetic emotionalism does in vividly bringing the heart to the attention of many persons.

Although in most individuals the heart is profoundly affected by emotional influences, the effect is usually so evanescent that no memory of it

is maintained. Emotions, such as fear, anger, expectation and love, are capable of accelerating the action of the heart and render the person conscious of the beating of the heart. The normal status is, of course, complete lack of consciousness of heart activity. However, under emotional stress or unaccustomed physical activity, cardiac consciousness occurs but with most persons no memory is retained. Proof of this is found by asking them when they were last aware of the beating of their hearts and the invariable answer is, "I do not remember."

In a review of the history of the human race it is interesting to note that the strongest of all emotions, fear, has dominated the life of man from the earliest ages and continues to be a potent influence in present-day civilization. Primitive man's existence was a constant conflict with the elements and with the many hazards of his environment, giving rise to and fostering his dominant emotion, fear. Many of our most accepted institutions find their existence in man's attempt to overcome some fear, or, in other words, where man may seek and often find protection. The history of religion is a typical example of this, embodying many forms and variations, yet each and all created to give protection, comfort and assurance.

With all of these facts in mind, it is not difficult to visualize the stage on which may be enacted the drama of cardiac neurosis. The caste comprises individuals in all walks of life and of all degrees of intellectual attainment.

Heredity is an important influence in propagating individuals whose temperament and psychic reactions are such that the development of neurosis is relatively simple. Undesirable traits and characteristics are unfortunately as frequently transmitted to progeny as are the sterling qualities that embody the eugenic ideal. The constant example that many children grow up with, that is, a parent of poor nervous stability who gives vent to emotional outbursts in meeting the usual problems of life, may do much in blazing the trail for their own lack of poise in later years.

\*From the Section on Cardiology, Mayo Clinic, Rochester, Minnesota. Read before the Northern Minnesota Medical Association, St. Cloud, Minn., Sept. 12, 1927.

Let us take for example a rather common series of events leading to the development of cardiac neurosis. Let us assume that the person in question has been under rather unusual nervous strain for a time and the result is a deficiency of nervous reserve. It is well known that when a person becomes nervously exhausted, his sense of proportion and his fineness of judgment often become distorted, particularly in matters dealing with his innermost self. His mind becomes dominated by uncertainties, he loses his sense of decisiveness, and soon an attitude of introspection commands his psychic mechanism. Some rather commonplace event may occur which may involve physical effort, such as a walk uphill, or it may be something suddenly startling, and instantly he is aware of rather rapid and heavy beating of the heart. The mental impression of this occurrence may be slight and quickly forgotten if not repeated. However, if, during the succeeding days or weeks, the heart consciousness is recurrent, a vivid mental impression may be created and the person is ruthlessly thrust among a variety of emotions, in which uncertainty dominates. In view of the fact that never before has he been subjected to such persistent and repeated cardiac discomfort, he becomes convinced that some serious disease has involved the heart. A vicious cycle becomes established consisting of a vivid mental impression, fallacious yet glaringly real, which further contributes to the fatigue of the nervous system. The resulting nervous exhaustion, brought about by uncertainty, worry, introspection, and so forth, is capable of increasing cardiac irritability, and diminishing materially the threshold at which palpitation, tachycardia and the associated symptoms of cardiac neurosis become evident. The recurrence and the persistence of these symptoms, in turn, magnify the mental impression of heart disease. The continuance of these abnormal reactions may finally lead to total invalidism.

The presence of premature contractions or extrasystoles is frequently the result of neurogenic influences. They are as common in normal hearts as in those invaded by disease. Any factor capable of increasing the irritability of the myocardium may give rise to premature contractions. The cardiac consciousness and the associated uncertainty and fear resulting from

premature contractions frequently lead to the establishment of frank cardiac neurosis.

Many cases of paroxysmal tachycardia likewise are neurogenic in origin and may intermittently disturb the patient for the greater part of his life. The fear attending the seizures and the anxiety and solicitation of relatives are often important factors in superimposing cardiac neurosis, with the result that the attacks may be greatly increased in frequency and severity. Paroxysmal nodal tachycardia is the type which is most frequently neurogenic. I have never observed paroxysmal auricular fibrillation, auricular flutter or ventricular tachycardia in hearts not involved by disease.

It is the duty of every physician irrevocably to settle the problem of the presence or absence of organic cardiac disease as soon as possible after the patient has consulted him. In many cases, the physician is responsible for the patient's development of cardiac neurosis. Often months and years of futile invalidism and mental anguish have resulted from medical error or uncertainty. Careful medical appraisal of the body as a whole, painstaking inquiry into the patient's life story, habits, and so forth, in conjunction with the necessary laboratory adjuncts, should settle the question. Several examinations are sometimes necessary, but the period of observation should not be protracted. I do not agree with those clinicians who still refuse to accept neurosis as a clinical entity. There are those who say that the various functional disturbances are the manifestations of concealed pathologic processes, and that examination has failed to reveal the real trouble. Nothing can be more harmful to the patient than such an attitude on the part of the physician. A number of years ago the great panacea for the cure of neurosis was the correction of uterine malpositions, then came the glorious era of the ptoses, then that of concealed tuberculosis, later the romantic field of endocrinology, and, recently, focal infection. I do not wish to appear to be iconoclastic, but I do believe that we, as physicians, must retain our judgment, maintain our perspective of medicine as a whole and not strain the confidence of our patients to the breaking point. We must not promise them miraculous cures from procedures whose bearing on the actual condition is extremely remote.

Many patients, through lack of medical judgment and confidence, run the gamut of quackery, striving futilely to reach the end of the rainbow, and after months or years of this misguided endeavor are at their starting point.

Most patients suffering from serious or advanced heart disease are not neurotic. It is often extremely difficult to obtain their complete cooperation in the maintenance of the necessary cardiac regimen because of their attitude of indifference to the hazards which they are willing to accept.

Occasionally, however, patients are afflicted with heart disease, who have developed well marked cardiac neurosis. They often suffer more from the superimposed neurosis than they do from the existing cardiac disease. This, in my experience, has been most frequent in cases of compensated mitral stenosis.

In some instances, it is difficult to prevent this dual derangement. It is necessary to inform the patients frankly of their cardiac lesion in order to obtain their cooperation in adhering to the restrictions which it may be necessary to impose. A free discussion, and warning them of the dangers of fear and introspection with their resulting penalties, will often abolish such tendencies. A definite change in life's philosophy is an absolutely necessary accomplishment for sufferers with heart disease in order to avert psychic and emotional disturbances. The realization that certain restrictions are imposed to modify their manner of living frequently fosters a more or less constant conflict of emotions. These patients must be made to understand that certain sacrifices on their part are necessary in order to attain a maximal expectation of life and that the sacrifices must either involve the material things in life or life itself.

The management of patients suffering from cardiac neurosis is often difficult and requires time and patience. This is possibly the reason why some practitioners are reluctant to assume responsibility in such cases.

The first attempt of the physician after the establishment of the diagnosis is to impart to the patient the real nature of the derangement. It is not sufficient to tell the patient that there is nothing wrong with the heart or that he is simply nervous. The subjective cardiac discomforts that he has experienced enormously outweigh such bland statements of fact. In most instances in which there is a full discussion with the patient and some relative of the reactions involved in the production of the neurosis, in terms that the layman fully understands, much benefit results. When the patient's level of intelligence is low, much difficulty is encountered in convincing him of the facts.

Cautious and sympathetic inquiry frequently discloses facts pertaining to the patient's life that have an important bearing on his condition. Not infrequently these problems can be eliminated, and complete recovery will result.

The other factors in the management of these patients are symptomatic. At times the careful use of bromide is helpful, but medication must be given with caution for so many patients place all their faith in a bottle of medicine, thereby defeating the fundamental principle of their treatment.

In some cases in which premature contractions are numerous and disturb the patient greatly, the use of quinidin proves helpful. This is also true in some cases of paroxysmal tachycardia, in which continued administration of the drug in appropriate dosage diminishes the frequency and the severity of the attacks and occasionally controls them entirely.

#### MAGIC MATERIA MEDICA

This is put on the market by one C. E. Krueger. He claims to be a chemist and states that, so far, he has "not been able to learn what this healing substance is," but emphasizes that his preparation contains just enough radium to be effective. Mr. Krueger has high and lofty ideas regarding its therapeutic value. He claims that Magic Materia Medica has "cured cataract," is "an excellent eye wash," is good for catarrh and hay-fever, and to have cured rheumatism,

neuralgia, lumbago, eczema, diphtheria, pleurisy, goiter, boils, pimples, stomach, intestinal and kidney trouble, and is even claimed to cure cancer. The A. M. A. Chemical Laboratory reports that from analysis it is concluded that "Magic Materia Medica" is essentially a 10 per cent solution of a mixture of approximately equal weights of anhydrous calcium nitrate and anhydrous calcium chloride, plus a very small amount of sodium iodide. (Jour. A. M. A., December 3, 1927, p. 1983.)

# MALARIA TREATMENT OF PARESIS\*

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TEN years ago Wagner-Jauregg induced artificially a malaria infection in nine patients suffering from general paresis. He had previously observed clinical improvement in paretics who had undergone acute infectious disease. Today, of these nine, three are living and well, five have died, and one remains stationary, clinically arrested.

In 1919 a series of twenty-five cases were treated by induced malaria by this Viennese psychiatrist<sup>20</sup> with a similar result; last summer his series of cases so treated numbered over a thousand. And today the literature contains reports of the Wagner-Jauregg treatment from most corners of the earth. Favorable results, hitherto regarded only as visionary, are more and more emphasized in the later reports. It is fair to estimate that the number of cases treated by now totals about five thousand.

Two years ago I submitted a preliminary report<sup>1</sup> on twenty-three cases of paresis treated by induced malaria infection. In 1924 the first inoculation was attempted at the Minneapolis General Hospital. However, successful inoculation was not possible until early in 1925. During that year fourteen cases of institutional paresis, many in the advanced stages, and fourteen non-institutional cases were inoculated. At the time of the preliminary report, six of the ten cases belonging to the latter series were then up and about, getting along quite well. Two had made no improvement at all and the remaining two had made slight improvement. Speech disorders, tremors, and mental symptoms were favorably influenced to a striking degree. Gain in weight was the rule, beginning in the second week following the cessation of malarial paroxysms, in cases showing clinical improvement.

*The total number of paretics inoculated: 35*

Series (a) 14—institutional cases treated two years ago

Series (b) 14—non-institutional cases treated two years ago

Series (c) 7—non-institutional cases treated less than two years ago

*Tabulation of clinical results*

	Full remission	Partial remission	Arrested	Progressing unfavorably	Malaria deaths	Died later
(a)	1	2	3	2	2	4
(b)	9	0	3	0	1	1
(c)	2	2	1	0	1	1

Of twenty-one cases inoculated outside of the state hospital, that is, cases treated in comparatively early stages, eleven are well today (52 per cent).

Of the fourteen cases of that group treated approximately two years ago, nine (64 per cent) are well today, three are clinically arrested and discharged from the hospital, one remains in the hospital and one died the year after inoculation.

Weygandt<sup>2</sup> reported 53 per cent remission in a group of some three hundred cases, after intervals ranging from one to three years. The von Jauregg<sup>3</sup> clinic found that a series of four hundred cases followed up in from two to seven and a quarter years presented 33 per cent full remissions and 14.5 per cent partial remissions.

I will discuss particularly the following: (a) the diagnosis of paresis; (b) the principles of malaria therapy; (c) necropsy findings in brains of patients treated by malaria inoculation; (d) serology.

## THE DIAGNOSIS

In order that a therapeutic report may have merit, it is obvious that first of all the disease treated must be correctly diagnosed. We are forced to admit that the diagnosis of paresis in a small percentage of cases cannot be made without reservation.

Lewis, Hubbard and Dyer<sup>4</sup> followed up one thousand five hundred and fifty-eight cases of paresis. One thousand one hundred and ninety-eight, or 77 per cent, died in the hospital. Eighty-eight per cent lived less than three years. Five and one-half per cent lived longer than five years. One is inclined to suspect that the small percentage outliving the usual expectancy may include doubtful cases. Schmidt-Kraepelin<sup>5</sup> found 6.8 per cent of cases in a series of some

\*Read before the annual meeting of the Minnesota State Medical Association, Duluth, Minnesota, June 30 to July 2, 1927.

two thousand cases to have shown a protracted course longer than six years.

Winkelman and Wilson<sup>6</sup> recently reviewed clinical and necropsy records of sixty-seven cases. They concluded that untreated cases of general paresis will show blood and spinal fluid evidences of syphilis; that a certain limited number of cases with mental symptoms and blood and spinal fluid evidences of a paretic nature may at necropsy prove not to be paresis; that a brain which shows a gross organic condition, such as hemorrhage, thrombosis, or gumma, rarely shows microscopic evidence of paresis; and strong laboratory evidences of syphilis without symptoms are not enough to allow the diagnosis of incipient general paresis. We know that the so-called paretic gold curve may be obtained in cases of neurosyphilis other than paresis, and also in multiple sclerosis, meningitis—especially the tuberculous type—in epidemic encephalitis and sometimes in brain tumors. Prodromata of irritability present in some cases as long as three or four years prior to the outbreak of acute symptoms, tendency to a feeling of weakness, and loss in weight, are in my experience strongly in favor of general paresis. It is safe to say that 5 per cent of cases diagnosed as paresis, though arrived at after careful study, may be justly regarded as doubtful cases. It is extremely important to make a differential diagnosis in neurosyphilis because of the bearing on prognosis and treatment.

#### PRINCIPLES OF NON-SPECIFIC THERAPY

There is still much difference of opinion regarding the essential factors involved in the therapeutic action of malaria. More favorable clinical results are shown to occur in my series as well as in many others, when the number of chills and height of fever curve approached the maximum. Post-mortem findings reveal too that spirochetes are practically never demonstrable when the temperature exceeds one hundred and five degrees Fahrenheit. Weichbrodt and Jahnel<sup>7</sup> have shown that by subjecting a rabbit infected with syphilis to a temperature of 107.6 degrees to 111 degrees Fahrenheit for an hour for at least three successive days, all spirochetes lose their viability. Schamberg and Rule<sup>8</sup> recently reported that heating a spirochete suspension for one hour at one hundred and four degrees Fahrenheit rendered it non-infective. The thermal

death point *extra vitam* is regarded by them to be 105.8 degrees Fahrenheit. By means of a hot bath, infected rabbits were induced to undergo temperature rises of four degrees Fahrenheit for twenty minutes, repeated for a number of days. The spirochetes lost their infectivity.

Broken down plasmodia and consequent throwing into the blood of foreign albumins with each paroxysm produces a specific effect according to Plehn.<sup>9</sup> The increased permeability of small blood vessels is the important mechanism according to Bratz and Schultz.<sup>10</sup> Mühlens and Kirschbaum<sup>11</sup> maintain that non-specific stimulation of the defensive mechanism follows destruction of red blood cells and consequent regeneration of them.

Purves-Stewart<sup>12</sup> explains therapeutic influence by the theory that pyrexia burns up the toxins attacking the cerebral cells.

Forster<sup>13</sup> succeeded in demonstrating the presence of spirochetes in three brains of cases in which fever did not exceed 105 degrees Fahrenheit.

Schumacher<sup>14</sup> maintains that in malaria therapy extensive destruction of red blood cells results in the development of autogenous lipid-albumin compounds which, in a bio-chemical sense, possess specific spirillicidal properties.

Perhaps it may not be long before we may be able to dispense with malaria inoculation and yet obtain no less favorable clinical results. And is it too much to hope that by combining induction of fever methods, external heat and internal foreign lipoprotein administration at the same time, syphilitic infection may be terminated promptly and effectively in all stages?

#### NECROPSY FINDINGS IN CASES TREATED BY MALARIA

Coming to the later chapters on the chronology of malaria treatment of paresis, we have the interesting one referring to the histological changes in the brains of patients treated, and dying of various causes. Sträussler and Koskinas<sup>15</sup> reported their studies of thirty-eight cases. They believe that the clinical remissions occurred simultaneously with recession of the anatomic changes. Many of these patients died within several months following treatment. Patients living longer than six months gave but scant evidence of a former paretic process in the brain. Only slight subependymal and meningeal thicken-

ng and increase in the nuclei of the zonal area could be detected.

Frets<sup>16</sup> examined ten brains of treated cases. These all presented variations from those not treated by malaria. The microscope confirms that anatomic benefit may parallel clinical and serologic improvement. Some special features of the general paretic cortex still persisted, although much less pronounced.

Freeman<sup>17</sup> says:

"Therapeutic malaria is followed rapidly by organization of the inflammatory exudate in the meninges and about the blood vessels. During the following months the exudates are resorbed and the glia and vascular tissue regress to a great degree. Finally, the cortical architecture is reconstructed by resumed cellular polarity and restored lamination and perhaps by thickening of the cortex. The ganglion cells of the cortex are more or less reduced in number. Fibrous glia beneath the pia and ependyma changes little. Spirochetes are not found.

"On the basis of fifteen cases of general paralysis treated by malaria in which the patients died later, it may be prophesied that eventually the term recovery will come to be used for certain cases instead of remission. Except for some reduction in the number of neurons in the cerebral cortex and marginal fibrillar gliosis, the anatomic picture practically does not deviate from the normal, and the brain is evidently in satisfactory working condition, to judge from histologic appearances. The necessity for early treatment is indicated by complete anatomic arrest without clinical improvement in a case of four years' duration before treatment."

disappearance of the inflammatory and degenerative lesions, but also considerable repair of the cortex. In the eight cases dying within a few weeks after the first chill, intensification of the pathologic process could be demonstrated.

Hassin and Bassoe<sup>18</sup> state that cure of general paralysis with modern methods—tryparsamide or malaria—cannot be expected. This is representative of the attitude of caution with which the question of curability of this malignant disease has been regarded.

Necropsy studies reported in the literature suggest grounds for an attitude of hope with regard to the question of the curability of paresis. Nevertheless, the evidences are not adequately convincing. We must look for more extensive neuropathologic research before this question can be regarded as more satisfactorily settled.

#### SEROLOGY IN MALARIA TREATED CASES

If histopathologic studies indicate a favorable course in the brain, taking place at or nearly the same time that clinical recovery occurs, what can we say about the blood and spinal fluid reactions? So far we have been able to check on the serological findings in but three extra-institutional cases treated two years ago.

Ferraro and Fang,<sup>19</sup> among others, have recently reviewed the literature referring to the effect of malaria treatment upon the cell and glob-

Case	Blood Wass.	Spinal fluid Wass.	Nonne	Cells	Colloidal Gold
BA {4/16/25	+	+	±	10	555555400 (Before inoculation)
{5/ 3/27	neg.	neg.	+1	1	0012231111 (After inoculation)
MG {8/31/25	+	+	+2	38	555432000 (Before inoculation)
{6/ 8/27	neg.	+	+2	27	2555554221 (After inoculation)
NP {5/ 3/25	neg.	+	+1	30	555554300 (Before inoculation)
{8/ 8/27	neg.	—	?	2	000000000 (After inoculation)

Freeman prophesies that the term recovery will come to be used for certain cases instead of remission. He emphasizes that the necessity for early treatment is particularly indicated on anatomic grounds. In his fifteen brains no spirochetes could be found. In two cases where treatment had failed completely the pathologic process seemed uninfluenced. One patient dying four months after malaria showed almost complete arrest of the paralytic process; the four others who had lived ten, seventeen, eighteen and nineteen months presented not only complete

ulin reaction and upon the blood and spinal fluid Wassermann, and the colloidal gold curve. They find that serological improvement gradually increases from 15 per cent of the cases within six months after treatment by malaria to 85 per cent examined thirty-six months after the inoculation. Fifty per cent of the spinal fluid specimens show a complete reversal to the normal number of cells two years after treatment; globulin reaction improved gradually, but was less pronounced; Wassermann reaction was completely negative thirty-six months following

inoculation in 68 per cent of cases; colloidal gold reaction persisted most and after two years began to flatten out in my cases. In thirty-six months 85.5 per cent of fluids show improvement and a few complete reversal to the normal. The blood Wassermann at the end of a six months interval was negative in 28 per cent of cases; at the end of three years 86 per cent were negative.

From all this it seems fair to conclude that the irreversibility of the serological reactions in general paresis, held until very recently to have never been really proven, can now be claimed as an actual occurrence.

The malaria treatment of paresis involves the consideration of many problems. Inasmuch as induced tertian malaria occasionally causes death, it is no doubt prudent to limit its application to patients suffering from a syphilitic disease that is lethal if untreated. That disease is paresis. The choice of the malaria treatment may still be regarded as based on empirical foundations. The observations of continued improvement and apparent recovery from paresis have indeed been striking; the attitude of skepticism so often hitherto assumed with regard to the malaria treatment seems, in retrospect, now quite extraordinary. Excepting probably tryparsamide, no form of specific chemotherapy has yielded clearly convincing results in prolonging the life of the paretic patient. The Wagner-Jauregg malaria treatment signifies an epoch-making achievement in the therapeutic annals of the field of mental diseases.

#### SUMMARY

The clinical results obtained by treating thirty-five paretic patients with induced malaria are recorded. Fourteen cases were of the advanced institutional type; twenty-one were in less advanced stages of the disease. The diagnosis of paresis, principles of malaria therapy, necropsy findings and serology of treated cases are discussed. Patients in the advanced stages of the disease were less favorably influenced than the series of patients in the relatively less advanced stages of the paretic disease. This latter series presented, after two years and more, a remission rate of 64 per cent.

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## PRESIDENT'S PAGE

C. B. WRIGHT, M.D.

*Minneapolis*

FELLOW members of the State Medical Association:

With the many demands of modern society on the pocket-book of the doctor, we are all anxious to keep down expenditures. From personal experience and from my observation, however, it seems to me that the majority of us are more interested in what we are getting for our money than what we are spending.

With this in mind I will briefly outline the budget of the Association for the coming year as determined by the advisory council in an attempt to show what the individual member of this Association is actually getting for his money.

Of the \$15.00 each member pays for 1928, \$2.00 goes to MINNESOTA MEDICINE; \$0.50 for legal expenditure; \$1.50 for the Education Fund; \$3.50 for the Public Health Education Committee; \$0.12 for the Health and Hospital Educational Committee; \$4.16 for administration; \$0.60 for the expense of the annual meeting; the remaining \$2.62 is the reserve for emergency expenditures.

Most of these items I feel are self-explanatory. The three large items which absorb most of the dues are first: \$4.16 for administration. This takes care of the salary of the part time executive secretary and the expense involved in the administration of his office. The office of part time secretary was established in 1924.

The secretary is essentially the business manager of the Association. He takes care of all the secretarial work of the council and the various committees. He makes personal visits to the societies that are inactive, and helps to stimulate them to activity and to maintain a higher standard. He has charge of the bulletins and keeps a complete card index of every physician in Minnesota, both those who are members of the State Association and those who are not. These records are kept up to date and they are sent monthly to the American Medical Association. He keeps a complete tabulation of the physicians in good standing and those who are not. He knows when they were licensed, what

school they graduated from, the date of graduation and their present location.

Although the medical defence has been discontinued there are still some cases pending. The secretary's duty is to follow up and keep records of such cases.

He attends to the collecting of dues, membership, etc., although he has nothing to do with the funds of the Association which are in the hands of the Finance Committee of the council. He acts as a liaison officer between the press and the laity. He makes all arrangements for the annual meeting, coöperating with the local committees to insure proper accommodations and meeting places. He coöperates with the Legislative committee and attends meetings. During the legislative session, he attends the meetings, making reports, etc. We have at present an unusually efficient secretary in Dr. E. A. Meyerding. I think we are getting more than our money's worth.

The second item of importance is \$3.50 from each member for the Public Health Education Committee, which is headed by Dr. George Earl. Few of the members of the Association appreciate the amount of work Dr. Earl has done on this committee. He has met with groups of physicians throughout the State in conjunction with the secretary, attempting to crystallize the ideas of the profession on medical publicity. This committee contemplates sending out weekly bulletins on scientific medicine in the State. Its plans provide for a speakers' bureau for lay meetings. This committee is attempting to work with the various lay health organizations in furnishing them the proper propaganda from the standpoint of the doctor. We are behind many other States in this work, and we may expect of this committee work which will lead to a finer coöperation of the public and more confidence in the high ideals of the medical profession.

The third item is \$2.62 placed in the reserve fund for emergency expenditures. It is only the part of a wise individual or group to lay up something for a rainy day. We were led to be-

lieve that there would be an attempt made to test the constitutionality of the Basic Science Law. This has not yet materialized, but may when enforcement is started. Furthermore, it will be necessary to maintain a substantial fund and an alert organization to prevent attempts against this act. Is it not the part of wisdom to have something to fall back on for an emergency of this kind?

Figures show that since the establishing of the part time secretary, physicians throughout the State regard membership in this Association as a great necessity. The American Medical Association Directory for 1925 gave the total number of physicians in Minnesota as 2,842. At that time there was a total membership in the Association of 2,010. In 1927 the total number was 2,982

and the membership was 2,026. Thus, in spite of the fact that the annual dues have been increased there has been a growth in membership. This we believe indicates an actively growing and more efficient organization.

Every member of the State Association must feel justly proud of his Association. Compare it, for instance, with a State like Indiana, with 4,162 licensed physicians, and only 2,774 members in the State Medical Association.

In conclusion, I can assure you that the men elected by you to carry on the business affairs of the State Association consider the handling of its funds a very great responsibility. They are trying their best to give something worth while for every cent invested. They ask of you, in return, your whole-hearted coöperation.

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# MINNESOTA MEDICINE

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## EDITORIAL

### **Humor**

Humor is often more of a corrective than stern criticism. Will Rogers has established a reputation as one of our leading humorists. In his recent articles entitled "Hole in One" which appeared in the Saturday Evening Post (November 5 and 12) he describes in a humorous way his recent gallbladder operation. One must be a true humorist to see anything funny in such an operation even when it is over—that is, if he actually had one. But what an opportunity to give some digs at the medical profession. These articles doubtless have been greatly enjoyed by members of the profession even though they are the butts of his remarks. How often the medical history and physical findings are made to fit

a preconceived diagnosis! And how likely the so-called diagnostician (and every specialist as well as general practitioner should be a real one) proves to be only a sign-post or overdoes the laboratory procedures and becomes a test-doctor. Too often the doctor is judged by the kind of a car he drives.

The humorist has a definite mission in life and the more real humor of the kind that doesn't hurt, but points out weaknesses—the more, we say, the better.

### **The Clinical Laboratory**

The need for specialization in medical laboratory procedures was the natural outgrowth of the recent rapid development of clinical laboratory methods. Medically trained individuals have taken up the specialty. The laboratory technician, less highly trained, and as a rule without a medical degree, followed. Laboratories, backed entirely by non-medical individuals and manned by technicians, have made their appearance, and financial considerations too often have overshadowed the scientific or medical side of the undertaking. Some such laboratories have been established as training schools for technicians, which from the start were doomed to failure because of their inability to obtain laboratory material with which to train technicians. High pressure business methods and even misrepresentations in order to obtain students have been resorted to. Technicians backed by a loan and an M.D., with no laboratory training, have entered the field.

The value of the standardization of clinical laboratories through the adoption of minimal requirements and the insistence of trained medical supervision seems apparent. The Council on Medical Education and Hospitals of the American Medical Association is doing an important service in the interests of the profession by insisting that clinical laboratories be operated under the supervision of medically trained individuals. The profession should be willing to do its share both individually and collectively by patronizing only such laboratories as are approved by the Council.

The following statement by the Council explains the present status of this particular phase of its work.

## CLINICAL LABORATORY SERVICE IN THE UNITED STATES

Statement by the  
Council on Medical Education and Hospitals

During the last decade there has been much discussion in medical and laboratory journals, and particularly on the platform of medical and laboratory conventions, regarding the status of the clinical laboratories of the country. Especially it was regretted that the practice of clinical pathology, regarded as one of the medical specialties, had fallen into disrepute. The fact was lamented that the laboratory work had fallen into the hands of lay technicians and become the toy of persons who had a purely commercial point of view and very little training for the work. Much disgust and quite a strong note of despair was sounded by those few members of the medical profession who had championed the cause of clinical pathology and had adopted that specialty as a life work.

Many letters were received at the office of the American Medical Association from practitioners of pathology and leaders in medicine, regretting the drift toward lay commercialism, and urging that something be done to counteract it. What to do about it was a question. Organizations of chemists were interested because some of their members ran laboratories. Likewise organizations of clinical pathologists, bacteriologists, and of the medical profession were equally interested. Some of these organizations working alone undertook to investigate and to standardize the practice of clinical pathology, hoping to check the drift of that practice into the hands of technicians and restore it to its rightful place as a medical specialty. The efforts of those organizations working single handed were of little or no avail except to emphasize the enormity of the task and the necessity for coöperation.

### COOPERATION EFFECTED IN 1923

The necessary coöperation of the laboratory and medical organizations was brought about in 1923 at the annual meeting of the American Medical Association in San Francisco. At that time, delegates sent by the American Chemical Society and the American Association of Pathologists and Bacteriologists separately petitioned the American Medical Association to establish some supervision over clinical laboratories. This led to the appointment of three committees representing the American Chemical Society, the American Association of Pathologists and Bacteriologists, and the Council on Medical Education and Hospitals. At a joint meeting of these committees in Chicago early in 1924, after much deliberation, certain basic principles underlying sound laboratory service were agreed upon which stressed specially a qualified bona fide director as the prime essential. The joint committee agreed that the work could best be conducted by the Council on Medical Education and Hospitals.

The first steps were: (a) to secure a complete list of laboratories in the country; (b) the preparation of a schedule of essentials in an approved clinical laboratory, and (c) the preparation of a questionnaire by

which the essential facts regarding each laboratory could be obtained. Each of these measures was carried out with the advice and coöperation of fifty or more clinicians and others expert in laboratory work, including the committeemen of the above-named organizations, and by the officers of the American Society of Clinical Pathologists, which very early showed an interest and from which the Council has received a hearty coöperation.

After being revised and adopted by all parties interested, the questionnaire was mailed to all the laboratories of the country and a most hearty response was received. A complete report of the survey, "Essentials of an Approved Clinical Laboratory," and a preliminary list of laboratories which appeared to be fully complying with those "Essentials," were published in the Hospital Number of the Journal for April 3, 1926. The facts as published were submitted to the House of Delegates of the American Medical Association at the Dallas session in 1926 and approved by that body.

To assist in giving as fair consideration as possible to each application for approval, a strong committee of laboratory experts was formed in every state or section of the country. Those committees aggregate one hundred and twenty individuals representing, as equally as possible, the coöperating organizations and hence the interests of the laboratory profession. Under the direction of the Council, each committeeman makes his investigation and renders his report or advice independently of other committeemen in the same district.

At the present time, of the three hundred and fourteen laboratories that have reported, one hundred and fifty-one, after careful investigation, have been placed on the approved list and other applications for approval are constantly being received.

The Council lends all possible assistance to laboratories whereby they may become eligible for admission to the accepted list. Every laboratory that makes a report and signifies a desire to conform to the requirements, is informed in regard to any deficiencies. The spirit of this movement all the way through is constructive. Anyone who knows the condition of the laboratory field at the time this survey was begun, would not expect very telling or spectacular results to be shown by this time; nevertheless, there are ample reasons for believing that actual improvements are being made: (1) a number of laboratories formerly run by technicians and only nominally under "medical" directors, have come under the ownership and actual control of clinical pathologists of high professional standing and ripe experience; (2) a number of laboratories under the control of technicians have gone out of business; (3) the "Essentials" have been published repeatedly and thus brought to the attention of all persons working in the field of clinical pathology; (4) there is an increased demand for pathologists to man the clinical laboratories of the country; (5) the director of the Mayo Foundation says that the salaries offered the pathological graduates of the Foundation are double those offered to other graduates of the Foundation; (6) the feeling of unsteadiness indicated in the

discussions of a few years ago has subsided to a considerable degree, and there is a more hopeful attitude on the part of the clinical pathologists themselves.

#### FUTURE OUTLOOK

The movement is still in its beginning, but a good start has been made. To what extent doctors have actually discontinued sending specimens to unapproved laboratories and are sending them to approved laboratories is not known. The educational results, however, are becoming increasingly evident. In order to secure the best analyses for the benefit of their patients as well as to best conserve the interests of the medical profession, physicians should refuse to have their work done at laboratories conducted under the direction of non-medical individuals. Much depends, also, on the continued hearty support of the various organizations and individuals who operate in the laboratory field. That this is already assured is indicated by the promptness with which laboratories are filling out and returning the form that has recently been mailed out by the Council on Medical Education and Hospitals for a complete and needed resurvey of laboratory service. The resulting data from this survey will be published for the benefit of all. Of course, any laboratories that are not yet on the list will be promptly considered for approval, if they express such a desire.

## MISCELLANEOUS

### CONFERENCE ON PUBLIC HEALTH RELATIONS

At the Conference on Public Health Relations held at the Nicollet Hotel in Minneapolis, Dec. 10, 1927, under the supervision of the Committee on Public Health Education of the State Medical Association, the subject was discussed from various standpoints. The committee, of which Dr. George Earl is chairman, has been devoting itself the past year to discussions in numerous smaller groups of physicians in an effort to crystallize medical opinion as to the best methods which should be employed by the Committee.

The following address comprises in part the remarks made at the conference by Mr. C. W. Jones, General Manager of the Minneapolis Journal, and should be interesting to the profession, as it gives a newspaper's side of the question of medical publicity. It is to be heartily wished that all Minnesota newspapers would adopt the same policy regarding medical advertising and medical news as that adopted by the Minneapolis Journal in the interest of public welfare and the avoidance of sensationalism.

#### THE MEDICAL PROFESSION FROM A NEWSPAPER'S VIEWPOINT C. W. JONES

This meeting is the first occasion that has come to the notice of the Minneapolis Journal in which the medical profession has taken the initiative in an effort to establish more intimate relations with the newspapers of the state or work out anything more than a

temporary arrangement for giving the general public information concerning the promotion of public health.

Usually when the medical profession takes the initiative in this particular matter, an emergency of some sort already exists; and after the emergency has been met, the work of disseminating public health information stops, so far as any consistent effort on the part of the medical profession is concerned. Two demonstrations of the truth of that statement are to be found in the smallpox scare of a few years ago, and in the more recent scarlet fever epidemic. Confronted with an emergency on both those occasions, the medical profession appealed to the newspapers to help give proper information to the public, and in the latter case to encourage use of the inoculation clinics. But after the emergency passed, contact between the medical profession and the newspapers ceased, so far as any initiative on the part of medical men was concerned.

The medical profession has let the newspapers assume the burden of what general public health education is being provided.

The Journal pays Dr. W. A. Evans to write a daily column on health problems, and to answer the questions of its readers. The arrangement was made on the initiative of the newspaper because it felt an obligation to the public to provide some consistent medium of information on medical and health subjects.

The long series of articles on proper and improper methods of reducing, and the dangers of improper reducing, published by the Journal last summer, was arranged, not by the medical profession, but by the initiative of a newspaper. The medical profession, it is true, co-operated generously and effectively in preparing the articles through the American Medical Association; but it is also true that had the Association itself conceived and pushed the same idea as an important public service, those articles might have reached millions more people than they did. Had the preparation and publication of those articles been a public instead of a private enterprise, and handled as well as the private enterprise was handled, virtually every important newspaper in the country would have been glad to publish them.

The same is true of the series of articles on "Why Men Fail," now running in the Sunday Journal. The idea was conceived and pushed by a newspaper, not by the medical profession. The American Medical Association and the American Psychiatric Association co-operated; but the initiative lay with the newspaper, not with the profession which might be expected to be constantly working to put such information before the whole American public.

These statements are made, not in a spirit of criticism, but as reasons for our honest belief that the medical profession has not taken full advantage of the opportunities available to it for increasing the public's knowledge about medical progress and the best methods of preserving health.

There is a similar illustration nearer home. The Minneapolis Journal is more fortunate than most newspapers in its contacts with the medical profession; but

frankness makes it necessary to say that this relationship is the result of a suggestion made by The Journal. In this instance again, the medical profession as represented by the Hennepin County Medical Society co-operated heartily; but the initiative came from the newspaper, not the physicians and surgeons.

Several years ago an interesting and unusual operation was performed in a Minneapolis hospital. The Journal endeavored to obtain the facts concerning it, and finally did so; but in the effort it encountered so many obstacles placed in its way by various doctors and hospital attendants that the city editor made up his mind there was a serious misunderstanding of purposes between the medical profession and the paper. He got in touch with officers of the Hennepin County Medical Society, telling them so far as The Journal could see there was no reason why The Journal could not be of service to them as well as to the public generally, in telling of important and interesting developments in medical science, if a basis of understanding could be reached. Two or three informal conferences were held, between officers and members of the publicity committee of the medical society and representatives of the Journal news department.

I think both parties to those meetings discovered that the physicians had no desire to suppress either important or merely interesting medical information, and that The Journal had no desire to sensationalize any information or to print anything which might be harmful or embarrassing to anyone. Both parties made up their minds that they could work together to mutual advantage and in the public good.

The net result was the decision by the medical society to appoint a committee to coöperate in furnishing information to The Journal. The society selected, in each principal field of medicine and surgery, two members who were authorized by the society to give information to The Journal freely and fully, whenever The Journal requested it. In return, The Journal agreed to consult the proper member of this committee concerning every news article of a medical nature, so that the accuracy of such articles in The Journal could be guaranteed. This arrangement, made some five years ago, is still in force; from the Journal's standpoint, and I think also from that of the Hennepin County Society, it has worked out splendidly. You will find no wild, half-baked stories of wonderful medical discoveries in The Journal; our arrangement with the medical society's committee enables us to choose the true from the false, the valuable from the quack. On the other hand, even with this arrangement, you will find in The Journal no articles on medical progress or discoveries or the promotion of public health that have come to The Journal through the initiative of the medical society. The Journal prints some articles of that nature; but they are articles which The Journal itself either prepares or buys. We would print many more of them if they were available, because we feel that to do so is not only good business, but a public service.

Once more, not in a spirit of criticism, but solely to fulfill the job assigned in Dr. Earl's letter, candor re-

quires the statement that when medical organizations do attempt to prepare information for the public through the newspapers, the work too often is relegated to persons apparently not qualified to do it. The series of articles prepared by the American Medical Association and the American Psychiatric Association demonstrate that medical information can be made interesting and informative at the same time. These two series were intensely interesting because they had been prepared by men who knew two things: their own work and the English language. When medical information is prepared for the public, it presumably has but one purpose—to reach and influence as many people as possible. To reach them and to influence them it must interest them. To interest them it must be prepared by men fired with enthusiasm for their subject and fully informed about it, and at the same time sufficiently skilled in the use of words common to ordinary men and women.

There is no insurmountable obstacle to prevent the Hennepin County Medical Society or the Minnesota State Medical Association from designing and preparing, from time to time, articles or series of articles on timely medical or health topics. There is no reason why, if the articles are prepared by the best men in the profession, and not left to somebody who has the most time to do the job, such articles could not be made as interesting and as valuable as the recent work of the American Medical Association and the Psychiatric Association.

#### THE NORTHWEST CONFERENCE FOR CHILD HEALTH AND PARENT EDUCATION

The Director and the Officers of *The Northwest Conference for Child Health and Parent Education*, to be held in the City of Saint Paul on March 27th, 28th, and 29th, appreciate the hospitality of the columns of MINNESOTA MEDICINE. They hope that this and future sessions of the Conference will merit the support alike of the medical press and the medical profession.

In the January number of MINNESOTA MEDICINE they issued *The Call to Positive Health*, which is the gathering note of the Conference. It is the call to two distinct phases of public health activity—the preservation of health and the promotion of health. Each of these two constructive measures, the one foundationing the other, applies with greatest force and promises largest fruitfulness in the years of youth. From the very inception to the actual maturity of life, structural growth and elasticity, functional development to its fullest range, reflex and mental reactions to constantly multiplying stimuli—these are the agencies which, intelligently used, promote child betterment. The child develops from within; he builds himself. We—whether directly as parents, or indirectly as physicians, teachers, health workers—simply direct the process. True, our direction is not, as yet, wise enough, does not extend far enough. It demands, for security of results—and long results of time they are—painstaking child study and intimate child understanding. And the understanding must not be confined to the individual

child. It must extend to all his relationships—to the contacts of child with child, of child with parent and parent with child, to the reactions of the child to his environment in the home, the school, the community. All these things make alike for health preservation and health promotion.

Technically speaking, health preservation depends fundamentally upon two safeguards, with the achievement of which the physician is most nearly concerned. It depends upon healthful living and upon the prevention, so far as our present knowledge permits, of disease. In a word, health is to be safeguarded from within and from without.

Does not the conception of child health and of parent education—and may we not add medical education as well—widen with these considerations? It is the child, as a whole—the child in his physical and mental development, in his moral and social habits and behaviors—with whom we have to deal. In a very real sense, in these days, it is a *new* child, born into a *new* world, growing up into a *new* environment, responding to *new* influences, it is this new child whom it is ours to keep well and to make better. This is the large meaning of The Northwest Conference for Child Health and Parent Education. It is the meaning of the call to positive health. Parent Education has to encompass this large meaning. The teachers of intelligent parenthood, in this comprehensive field, are in demand.

Mothers, fathers, teachers, physicians, public health workers, and nurses will find the three days' session of the Conference a rich reward for the effort and cost of attendance.\*

RICHARD OLDING BEARD, M.D.  
Executive Secretary to the Conference

\*For information address the executive secretary, offices of The Saint Paul Association, Fourth and Cedar Streets, Saint Paul, Minn.

## OBITUARY

### Dr. Charles E. Smith

With the death of Dr. Charles E. Smith, Jan. 10, 1928, at the age of 85, the last of the group of first physicians in the state passed away.

Born in the East, Dr. Smith received his M.D. degree at the University of Pennsylvania. He immediately moved to Saint Paul in 1855 with his father, Dr. F. R. Smith. He was city and county physician before there was any city hospital and when Saint Paul consisted of but one graded street.

Dr. Smith practised continuously in Saint Paul until forced to give up active practice by ill health. For a number of years he was associated with the late Dr. E. J. Abbott. His father and grandfather before him were physicians, and his son, the late Dr. Charles E. Smith, Jr., followed in his footsteps.

## REPORTS AND ANNOUNCEMENTS OF SOCIETIES

### A. M. A. MEETING

Arrangements are being made for the Scientific Exhibit for the Minneapolis Session of the American Medical Association, June 11 to 15, 1928. The Scientific Exhibit will be located in the Minneapolis Auditorium; in this building will also be housed the Registration Bureau, Technical Exhibits, and some of the Sections of the Scientific Assembly.

The Committee on Scientific Exhibit emphasizes that exhibits should be presented in a way which will stress their scientific value. This may be done by carefully worded explanatory placards, but particularly by personal demonstration. (The Committee requires that all booths shall be in charge of a competent demonstrator.) Also it should be remembered that the general attractiveness of the exhibit is essential; the Committee will do its part by having the booths decorated appropriately and will furnish uniform signs giving the name of exhibitor and the title of the exhibit. The total amount of space available in Minneapolis is only slightly larger than that available at the 1927 meeting in Washington. From the interest already manifested in the next Scientific Exhibit, it is evident that large blocks of space cannot be assigned to individual exhibitors.

If you desire to exhibit, an application blank may be secured from the Chairman of the Local Committee on Scientific Exhibit, Dr. William A. O'Brien, University Hospital, Minneapolis, or Paul Nicholas Leech, Director, Scientific Exhibit, 535 North Dearborn St., Chicago, and should be returned as soon as possible. Applications must be received before March 20th. In order that the amount of space available may be apportioned to the best advantage to all concerned, the Committee will make no assignments previous to April 15th.

The Motion Picture Theater, on recommendation of the Board of Trustees, will be omitted at the Minneapolis Session.

### BLUE EARTH COUNTY MEDICAL SOCIETY

At the annual meeting of the Blue Earth County Medical Society held December 19 at the office of the Mankato Clinic, the officers for 1928 were elected as follows: J. T. Schlesselman, M.D., Mankato, president; P. H. O'Connor, M.D., Amboy, vice president; W. C. Stillwell, M.D., Mankato, secretary-treasurer; Wm. Black, M.D., Mankato, delegate; H. J. Lloyd, M.D., Mankato, alternate.

Those elected to the Board of Censors are Drs. T. C. Kelly, Mankato, J. H. James, Mankato, and V. I. Miller, Mankato.

### THE STATE MEDICAL SOCIETY OF WISCONSIN

The State Medical Society of Wisconsin will hold its 1928 meeting in Milwaukee, opening Tuesday evening, September 11, with scientific sessions on Wednesday, Thursday and Friday, September 12, 13 and 14.

## MINNEAPOLIS SURGICAL SOCIETY

The February meeting of the Minneapolis Surgical Society will be held February 2 at the home of Dr. J. Frank Corbett. The program will be:

1. Case Reports
  - a. Sigmoidal Fistula Discharging through the Right Thigh.  
Dr. C. M. Roan.
  - b. Renal Calculus.  
Dr. Leo Murphy.
2. Embolctomy, with Report of the Removal of an Embolus from the Brachial Artery.  
Dr. H. F. Wiese.
3. Intestinal Obstruction Due to a Gallstone.  
Dr. R. C. Webb.

Election of officers.

The January meeting of the Society was held January 5 at the Minneapolis General Hospital, with the following program:

1. The Treatment of Arteriosclerotic Gangrene.  
Dr. E. A. Regnier.
2. Operative Treatment of Fractures, Especially of the Humerus.  
Dr. R. R. Cranmer.

## RED RIVER VALLEY MEDICAL SOCIETY

The annual meeting of the Red River Valley Medical Society was held at the Hotel Crookston, Crookston, Minn., beginning with a dinner at 6:30 p. m., Friday, Dec. 16, 1927. The members of the Ladies Auxiliary also attended. In spite of the severe weather and almost impassable roads, places were laid for 45. After the dinner the ladies adjourned to their own meeting.

As this was the annual business meeting of the society the entire program had been made up of medical economic subjects, as follows:

1. The Doctor and the Law, Senator J. H. Hougen, Crookston.
2. The Problem of Medical Fees:
  - (a) As seen by the doctor, Dr. H. H. Hodson, Crookston.
  - (b) As seen by the collection agency, Mr. C. F. Franz, Crookston.
3. The General Practitioner:
  - (a) In relation to his fellow practitioner and the specialist, Dr. W. H. Henney, McIntosh.
  - (b) In relation to his patients and the community, Dr. J. A. Roy, Red Lake Falls.

These subjects all invoked a liberal discussion, as did the subject of a minimum fee bill, and the matter of liability insurance, which were brought up at the business session.

Prizes for attendance at this meeting, which had been offered by the society, were distributed as follows:

1. To the doctor coming the longest distance: A years subscription to Hygieia, to Dr. C. M. Adkins, Grygla, who had traveled about 82 miles to attend the meeting. Honorable mention should be made of Dr. J. J. Stratte of Hallock, who came nearly 70 miles.
2. To the oldest doctor attending: A copy of the

"New Medical Follies," to Dr. G. S. Wattam, of Warren, who because of his youthful age, in spite of advanced years, always attends meetings regularly.

3. To the most recent doctor's wife: Three years subscription to the Northwestern Health Journal, to Mrs. C. L. Oppegaard, Crookston.

Officers elected for the ensuing year were as follows: President, Dr. J. F. Norman, Crookston; vice president, Dr. H. W. Froehlich, Thief River Falls; secretary-treasurer, Dr. M. O. Oppegaard, Crookston; Delegates, Dr. H. M. Blegen, Warren and Dr. O. E. Locken, Crookston; alternates, Dr. C. L. Oppegaard, Crookston, and Dr. W. H. Henney, McIntosh; censor for three years, Dr. J. A. Roy, Red Lake Falls.

## OF GENERAL INTEREST

Dr. A. J. Wentworth of Mankato attended the annual convention of the Radiological Society of North American at New Orleans the first part of December.

Dr. A. E. Sohmer of Mankato attended the special course in Urology given at the Mayo Clinic, Rochester, in December.

Dr. A. R. Blakey and Dr. E. A. Rygh of Stillwater have recently located at Osakis and Minneapolis, respectively.

Dr. C. A. Ingerson of Saint Paul, coronor of Ramsey County, has been elected a member of the executive council and of the advisory board of the National Association of Coroners.

Dr. A. C. Strachauer, Minneapolis, will give the address in Surgery at the meeting of the Nebraska division of the American College of Surgeons in Omaha, on February 7. His subject will be cancer.

Articles of incorporation have been filed with the secretary of state for the Franklin Public Hospital Association for the purpose of building a new hospital in Minneapolis. The incorporators are Dr. E. K. Green, Dr. John S. Macnie, Dr. Stephen H. Baxter, and Dr. Clarence E. Willcutt.

Dr. Harold S. Diehl, director of the student health service of the University of Minnesota, has been re-elected to the presidency of the American Students' Health Association. Dr. Diehl has just returned from New York, where the association held its annual meeting.

An interesting report concerning the basic science board examinations instituted last June has been made by Dr. E. T. Bell, showing that less than 10 per cent of those appearing for examination have failed to pass. Since the board began functioning 112 candidates have been examined. Of this number 105 have been given passing grades.

Dr. Hobart C. Johnson of Lamberton will leave early this month for London, where he will take a six months' course in the school of tropical medicine and hygiene at the University of London, preparatory to taking up his duties in Tanganyika territory, British East Africa, where he and Mrs. Johnson will act as medical missionaries.

Dr. Ethel Barrow was married to Dr. K. Frater on December 17 in Rochester.

Dr. E. Covell Bayley will locate in Lake City, Minn. and take over the practice of his father, the late Dr. Emery H. Bayley, as soon as he has completed his intern's course at the Jersey City Hospital, New Jersey. Dr. Covell Bayley is a graduate of the University of Minnesota medical department, and has nearly completed two years' of hospital experience.

Dr. Gerald M. Koepcke, who is associated with Doctors F. J. and J. A. Pratt, in the practice of eye, ear, nose and throat, Minneapolis, has just returned from Vienna, where he spent the summer doing post-graduate work. Mrs. Koepcke accompanied him abroad. Dr. Koepcke has been appointed as an assistant instructor at the University of Minnesota medical school, in the department of Ophthalmology and Otolaryngology, and also on the staff of the Minneapolis General Hospital.

A regional society, to comprise the medical associations of Minnesota, Wisconsin, North and South Dakota, was organized at a meeting at The Saint Paul Hotel January 15, 1928.

Dr. W. F. Braasch, Rochester, Minn., was elected president of the new organization and Dr. George Crownhart, Milwaukee, Wis., was chosen secretary. A committee will work out details of organization.

The first meeting of the new organization will take place in Minneapolis in June, the first day of the convention of the American Medical Society. Permanent officers will be elected and organization completed.

An invitation is extended to all physicians interested in the subject of medical education to attend the Annual Congress on Medical Education, Medical Licensure and Hospitals which is to be held at the Palmer House, Chicago, Feb. 6, 7 and 8, 1928. The program is most comprehensive, some of the subjects to be discussed being: Medical research in the governmental medical departments; undergraduate instruction; autopsies; activities of state medical boards; basic science laws; annual registration of physicians.

Membership in the Medical Society of the County of Kings varies, depending on the date of graduation from medical school. The idea is not a bad one and might well be adopted by other county societies. The following schedule of membership dues is taken from the December Bulletin of the Medical Society of the County of Kings:

#### COST OF MEMBERSHIP

For New Members (never previously affiliated) *the fees for the first year are twenty dollars* (ten dollars to the County Society plus the State Assessment).

Subsequently, *from twenty to thirty-five dollars per annum*. This amount is the State Assessment of ten dollars plus the Society Fee of:

\$10	if the member graduated in	1920-1926
\$15	" " " " "	1915-1919
\$20	" " " " "	1910-1914
\$25	" " " " "	1890-1909
\$15	" " " " "	1861-1889

Arrangements are being made by the Committees on Special Study and Postgraduate Work of the Ramsey County Medical Society for a series of twelve luncheon meetings to begin in February, the speakers to be supplied by the University Extension division of the University of Minnesota medical school.

The secretaries of the component societies of the State Medical Association met in an all day session January 14 at the Saint Paul Hotel, for the discussion of the various association activities. The working of the new Basic Science law was reported by Drs. Scammon and Bell, and Dr. Comstock spoke on the new Medical Practice Act. Each county secretary was called upon to discuss the subject of the present State Association dues. In connection with the secretaries' meeting, the Council and the various new state medical committees also met for a discussion of their activities during the current year.

#### UNIVERSITY NEWS

The University of Minnesota's long-considered plan to build an auditorium as a memorial to the late President Cyrus Northrop and as a center for general student gatherings, lectures, addresses by distinguished visitors, and other large meetings, is about to be realized. Bids on the new structure probably will be asked within the next month or six weeks.

The Auditorium will be the second unit erected chiefly with money derived by gifts pledged during the Stadium-Auditorium campaign conducted in the fall of 1922. Out of funds then given the Memorial Stadium has already been built and has been in use for four seasons. It was opened in October, 1924.

Approximately \$750,000 is on hand with which to build the Auditorium, a memorial to the man who was president of the University from 1885 until 1911. Nearly \$700,000 of this has come in as payments on pledges made during the campaign, to which sum the university is adding enough from other sources to make up the total. The main structure of the Auditorium will be erected now, with several large elements in the original plans left out until additional pledges are paid up.

It will stand at the head of the University Mall, as designated in the plans for a new campus outlined some years ago by Cass Gilbert. Backing up to the Minnesota Union it will occupy the ground now devoted to the pharmaceutical gardens and will look towards Washington Avenue down the open space of lawn and trees which is flanked on either side by such buildings as the Library, Administration, Physics and the School of Chemistry. In this way it will enclose at its upper end the long quadrangle of campus which is to be the Mall.

The Field House will be ready for occupancy some time in February. Its exterior dimensions are approximately 150 by 234 ft. and its maximum interior height 100 feet from floor to roof. A quarter mile running track, a removable basketball floor, and permanent seats to accommodate 12,000 persons at basketball games are being provided. In the main area it will have ample room for a football team to practice, including punting, and for baseball to be played.

## NEW AND NON-OFFICIAL REMEDIES

*Anaerobic Antitoxin*.—An antitoxic serum prepared by immunizing animals against the anaerobic bacteria found in gangrenous wounds. Evidence has been published to indicate that the use of anaerobic toxin preparations may be of value in the treatment of gas gangrene.

*Anaerobic Antitoxin (Polyvalent)-Lederle*.—An antitoxic serum prepared by immunizing horses with gradually increasing doses of *B. tetani* and of *B. welchii* and *Vibrio septique* both obtained from anaerobic broth cultures of the organisms. Potency tests for the content of tetanus antitoxin and *B. welchii* (perfringens) antitoxin are made according to the methods prescribed by the U. S. Hygienic Laboratory; for determining the strength of the *Vibrio septique* antitoxin, serial dilutions of the antitoxin are mixed with *Vibrio septique* toxin and the mixtures injected into rabbits. The product is marketed in 100 c.c. vials, each cubic centimeter containing 50 units of tetanus antitoxin, 2 units of perfringens (*B. welchii*) antitoxin, and sufficient *Vibrio septique* antitoxin to neutralize one thousand M. L. D. of the *Vibrio septique* toxin. Lederle Antitoxin Laboratories, New York.

*Ampuls Dextrose (d-Glucose) 10 Gm., 20 c.c.*—Each ampule contains Dextrose, U. S. P., 10 Gm.; cresol, 0.1 per cent; distilled water to make 20 c.c.; buffered with dibasic sodium phosphate anhydrous and potassium biphosphate anhydrous. H. K. Mulford Co., Philadelphia.

*Ampuls Dextrose (d-Glucose) 25 Gm., 50 c.c.*—Each ampule contains Dextrose, U. S. P., 25 Gm.; cresol, 0.1 per cent; distilled water to make 50 c.c.; buffered with dibasic sodium phosphate anhydrous and potassium biphosphate anhydrous. H. K. Mulford Co., Philadelphia. (Jour. A. M. A., December 10, 1927, p. 2041.)

*Insulin-Squibb, 100 units, 10 c.c.*—Each c.c. contains 100 units of insulin-Squibb (New and Non-official Remedies, 1927, p. 197). E. R. Squibb & Sons, New York.

*Staphylococcus Mixed Bacterin*.—A staphylococcus vaccine (New and Non-official Remedies, 1927, p. 363), each c.c. containing 4,000 million killed *Staphylococcus albus* and *Staphylococcus aureus* in equal proportions. It is marketed in 5 c.c. vial packages; in single 20 c.c. vial packages; and in packages of six 1 c.c. ampules. Abbott Laboratories, North Chicago, Ill.

*Erythrol Tetranitrate Tablets-Merck, ¼ grain*.—Each tablet contains ¼ grain of erythrol tetranitrate (New and Non-official Remedies, 1927, p. 267). Merck & Co., Inc., Rahway, N. J. (Jour. A. M. A., December 24, 1927, p. 2193.)

*Typhoid Prophylactic*.—This typhoid vaccine (New and Non-official Remedies, 1927, p. 366) is also marketed in 5 c.c. vials containing 1 billion killed typhoid bacilli per c.c.; in 20 c.c. vials containing 1 billion killed typhoid bacilli per c.c. Abbott Laboratories, North Chicago, Ill. (Jour. A. M. A., December 31, 1927, p. 2263.)

## PROCEEDINGS OF THE MINNE- SOTA ACADEMY OF MEDICINE

Meeting of Oct. 12, 1927

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Wednesday evening, October 12, 1927. Dinner was served at 7 p. m. and the meeting was called to order by the President, Dr. J. E. Hynes, at 8 p. m. There were 27 members and five visitors present.

In the absence of the Secretary, Dr. McCloud read the minutes of the September meeting. Approved as read.

The President called on Dr. I. A. Abt, of Chicago, to give a talk and Dr. Abt responded in a most cordial manner.

The paper of the evening was the President's Address, which had been postponed from the September meeting. This was read by the retiring President, Dr. Frank E. Burch, and was entitled "The Early Development of Cataract Surgery" and illustrated with numerous lantern slides. Dr. Burch also showed the members of the Academy some rare old and interesting volumes on the subject.

### DISCUSSION

DR. JOHN BROWN (St. Paul): I have enjoyed very much hearing Dr. Burch on this subject. The thing that struck me, and was not emphasized particularly, is that these surgeons of that time must have gone into the eye with considerable temerity, and there must have been many eyes sacrificed. I would like to ask Dr. Burch if there is anything given in these papers that suggests the vast numbers of eyes lost by infection and if they did anything to combat it at that time. I think it must have taken a great deal of fortitude then to go after these cataracts as they did.

DR. H. W. GRANT (St. Paul): I think this subject and address has been extremely interesting. In my time I have seen nothing but the classical operation with the Von Graefe incision and I believe at the present time we have reached the limit of improvement in technique. If infection could be removed the results would be still better. Practically all eyes lost at the present time are through infection.

DR. BURCH (in closing): I have nothing to add except to answer Dr. Brown's inquiry as to whether any mention was made of the means of combating infection and preventing destruction of the eye before the day of sepsis. They were numerous, and in every textbook I was impressed with the importance or stress laid upon the season of the year, the phase of the moon, the degree of humidity, and the reliance placed in prayer, etc. There were no antiseptics used, although mention is made of many collyria, brandy and water dressings, etc., some of which had antiseptic virtue.

DR. F. L. ADAIR (Minneapolis) reported a case of "Tubal Pregnancy Accompanied by Ovarian Cyst on the Same Side":\*

\*From the Gynecological Service, Minneapolis General Hospital, Minneapolis, Minn. F. L. Adair, M.D., and R. E. McDonald, M.D.

M. R., a multipara 37 years old, was admitted to the Gynecological Service of this hospital September 14, 1927, complaining of vaginal bleeding which began two weeks before and has persisted daily up to the present time.

The patient was well developed and well nourished and showed no evidence of acute illness when admitted to the hospital. Her past history included seven normal pregnancies to term, no miscarriages or abortions, and no sickness other than the usual diseases of childhood. The menstrual life of the patient has been entirely normal since the establishment of her menses at the age of 13. From August 2nd to the 7th there was a normal period which was followed by the present vaginal bleeding which began September 1st and has continued in small amounts daily until examination, September 14th.

Upon questioning, the patient expressed the belief that she was not pregnant since she had not experienced any of the symptoms noted in her other pregnancies. At times during the last three days she had had a few colicky pains in her lower abdomen but they were never very definitely localized nor had they caused any marked discomfort or alarm.

A regular menstrual period was expected in the first week of September, but when the patient continued to flow for two weeks (longer than she ever had before) she feared that something was wrong and came into the hospital for examination and treatment.

Physical examination showed the woman to be well developed and slightly anemic but otherwise quite normal to inspection. The lungs and heart were normal though the blood pressure was elevated to a systolic pressure of 140 and a diastolic of 102. Moderate tenderness on deep palpation was noted in the left lower quadrant but no muscle spasm or rigidity was present.

A few small lesions resembling condylomata were seen on the labia but these were non-specific and the Wassermann reaction was negative. A bloody discharge of bright red color and containing shreds oozed steadily from the cervix. The cervix was of the large, bulbous type lacerated deeply on both sides and was slightly softer than normal. The corpus, however, was normal in size, position and consistency. Its mobility was noticeably restricted. In the left adnexal region a soft boggy mass, about one and one-half times the size of the corpus, could be outlined extending posteriorly into the cul-de-sac of Douglas. Examination of the left adnexa caused the patient considerable pain. The right appendages seemed entirely normal.

At this time a diagnosis of probable left tubal pregnancy, unruptured, was made with the possibility of a left salpingo-oöphoritis also considered.

Following the initial examination the patient was put to bed and treated expectantly with hot douches and fluid extract of ergot in one drachm doses every four hours. After four days in the hospital all bleeding stopped and a re-examination was made with the patient feeling much improved and having no pain. At this time the mass, which had been previously quite tender, no longer caused pain during examination. The tumor was now felt to be definitely fluctuant, about 6

to 7 cm. in diameter but not adherent to the corpus, and the diagnosis was changed. A left ovarian cyst seemed most probable and surgical treatment was advised.

An operation was performed on September 21st, after the patient had been temperature-free for seven days. At this time the hemoglobin was 68 per cent by Sahli method, erythrocyte count 3,900,000, and the leukocyte count 17,200, of which 78 per cent were p.m.n., 17 per cent lymphocytes, 2 per cent basophils, and 1 per cent mononucleurs.

A midline suprapubic incision was used. As the peritoneum was exposed a slate-blue discoloration was noted and was explained by a large amount of dark red blood and clots which lay free in the lower peritoneal cavity. In exploring the pelvis the right adnexa were found normal but two distinct and closely associated masses were found in the left iliac fossa. One of these was a cystic ovary, and the other the left tube which was markedly enlarged in its isthmus, ampullar and fimbriated portions. The tube was amputated just proximal to the enlarged distal half and the ovary removed at a small pedicle arising from the utero-ovarian ligament. After removal the tube was examined and found to be unruptured. Bleeding had occurred through the fimbriated end.

The two masses, which were about equal in size and shape, lay close together and are compared in the accompanying illustration. From this comparison and the fact that the tumor masses lay in such close apposition, it may be seen that the case presented some difficulties in making an accurate diagnosis (Fig. 1).

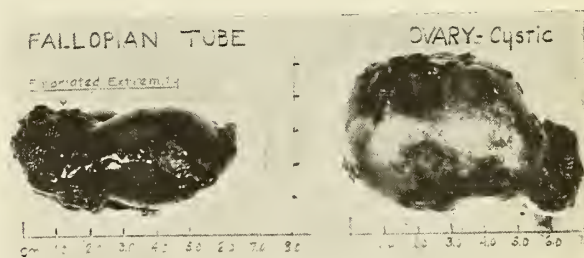


Fig. 1.

Recovery was prompt and uneventful.

The pathologist submitted the following gross and microscopic reports: "The ovary has undergone extensive cystic degeneration and the normal tissue of the tube is largely replaced by soft hemorrhagic tissue resembling placenta. Microscopic examination of the tube shows chorionic villi and decidua."

DR. E. M. HAMMES (St. Paul) reported the following case:

A man, age 68, was seen in consultation with Dr. L. E. Penny, October 6, 1927. His family and personal histories were negative.

On September 16, 1927, the patient suddenly became quite weak, so that he had to remain in bed. He was seen by Dr. Penny, who found nothing abnormal except a tachycardia, rate 120 to 140. The general weak-

ness continued and Dr. Hall was called in consultation. All findings were negative at this time except for the persistent tachycardia and a marked general weakness. His heart sounds were normal. There was no change noted in his condition until October 5th. On that date the patient walked from his bed to the bathroom, and when he attempted to get up he found that he was unable to walk. He finally got back to bed with the help of his wife. Doctor Penny was called. The patient was very restless, tossing in bed. He complained of severe pain in his left leg. Both extremities were paralyzed. He was given a hypodermic of strychnia in the right leg and its function gradually returned. The left leg remained paralyzed, was cold, and cyanotic.

When I saw him that evening he seemed somewhat flighty, had definite hallucinations of sight—saw small bugs crawling up and down the wall, but knew that this could not be true because his wife was such an excellent housekeeper. He knew he was in his own home, but thought that the whole building had been moved to Stillwater.

The neurological examination was negative except for the findings in the lower extremities. The right leg was normal except for an increased knee jerk and a positive Babinski; pulsation in the right leg could be felt in the femoral and dorsal pedis arteries. The left leg was completely paralyzed. There was no pulsation in any artery, including the femoral; the leg was cold, the toes were dry and gangrenous, a line of demarcation was noted below the knee, the knee and Achilles jerks were absent, there was no Babinski, and no plantar reflex. There was complete loss of all forms of sensation from the knee down. His pulse was 126, temperature normal, blood pressure systolic 140, diastolic 75. Blood Wassermann negative.

The patient gradually became more delirious, and Dr. Colvin was called in consultation with the idea of amputating the leg. Dr. Colvin advised against this. The patient died October 11, 1927.

This patient evidently developed a transient thrombosis or embolus of the abdominal aorta, sufficiently high up to interfere with the circulation of the spinal cord, producing an ischemia with a subsequent paralysis. The thrombus finally lodged in the left common iliac artery, with the resultant gangrene of the left leg. This would explain the early transient involvement of the right leg with increased knee jerk and Babinski, and the terminal changes in the left leg.

No postmortem was obtained.

#### DISCUSSION

DR. GILFILLAN: Was there pain when he first had the paralysis?

DR. HAMMES: He had excruciating pain below the left knee. At no time did he have any temperature. There was no evidence of endocarditis, according to Dr. Hall and Dr. Penny.

DR. GILFILLAN: A reasonable explanation of the case would be a development of an auricular flutter with formation of a thrombus in the left auricle and from this an embolus, lodging at the bifurcation of the aorta, later moving into the left common iliac artery.

However, this will not explain the positive Babinski and increased knee jerk in the right leg.

The meeting adjourned.

CARL B. DRAKE, M.D.  
Secretary

## PROGRESS

Abstracts to be submitted to Section Supervisors.

Members are urged to abstract valuable articles which they run across in their reading and send the abstracts to the physicians in charge of the respective sections. In order to avoid duplication it would be well to communicate with one of the section supervisors before the article is abstracted.

## MEDICINE

### SUPERVISORS:

F. J. HIRSCHBOECK,  
205 W. 2nd STREET, DULUTH  
THOMAS A. PEPPARD,  
LA SALLE BLDG., MINNEAPOLIS

FORMS OF PLEURO-PULMONARY TUBERCULOSIS SEEN AMONG THE ARABS (IN NORTH-ERN AFRICA): Ryckebush George (Review de la tuberculose, 1927—3rd Series, VIII, 481). This report is based on the author's personal experience in four years service as military surgeon in the French Army. During this time he had occasion to examine numerous tuberculous Arabs, both soldiers and civilians. Many of the cases seen by him clinically, afterward came to autopsy.

Tuberculosis is common among Arabs who live in towns or cities or who have been in contact with Europeans. For instance, 94 per cent of the adults at Arzeu in Algeria reacted to the skin tuberculin test. In a rural community of Arab shepherds, not in contact with Europeans, 108 tests were made and only four positive reactions were obtained. Three of these were in one family in which there had been two deaths from tuberculosis. In the cities and villages the types of tuberculosis found are not very different from those seen in Europe. In the rural regions, cutaneous, glandular and osteoarthritic forms are more common and when the lungs are affected the clinical picture has certain special features. This is an important matter to the French military authorities as five times as many of their Arab soldiers are from the country as from the cities.

The types of tuberculosis met among the rural Arabs in Northern Africa are grouped in the following classes.

1. Trachea—bronchial adenitis.
2. Tuberculous bronchitis.
3. Pleural symphysis.
4. Tuberculous broncho-pneumonia.
5. Massive caseous pneumonia.
6. Miliary tuberculosis.
7. Disseminated tuberculosis.

The tracheo-bronchial adenitis is associated with more or less extensive mediastinal lesions. The clinical signs of these hilus lesions upon which the writer places reliance and which he has seen confirmed by autopsy are paravertebral dullness, a blowing type of respiration with whispered pectoriloquy, D'Espines sign, Wirrlez voice, loud transmission of transthoracic fremitus, transmission of the heart sounds, etc. These glandular masses often become very large and become associated with parenchymal lesions. Generally an active associated primary focus is demonstrable. These large glandular masses are indicative of a primary infection more or less recent and not of a re-infection.

A simple tuberculous bronchitis is a less virulent form of tuberculosis seen in those patients that have acquired some resistance by former infection or a tendency to fibrosis sometimes dependent on preceding syphilis. This type was especially common among old soldiers who in spite of coughing and spitting were able to do their work for long periods and were in that way a fruitful source of infection to other soldiers.

The pleural infections resulting in obliteration of the pleural cavity and various types of thickened pleural walls were often merely preliminary to serious lung lesions. Fluid formation was rare. Various forms of broncho-pneumonia, acute caseous pneumonia and miliary tuberculosis were frequently encountered. The author of the paper concludes that while some of the cases seen were evidently examples of primary infection, more were due to transitional lesions somewhat affected by previous infection. The Arabs seem to be midway between the blacks and the whites as regards immunity development.

A. T. LAIRD, M.D.

**THE PROGNOSIS AND TREATMENT OF THE RHEUMATIC INFECTION:** Thos. T. Mackie (The Amer. Heart Jour., October, 1927). The author's contribution has been recognized recently by an editorial in the London Lancet, indicating the value and widespread interest in his theory of the nature of the disease.

Mackie believes that rheumatism is a chronic and often a progressive disease characterized by alternating periods of activity and quiescence. There are certain points of similarity between rheumatic infection and syphilis of the vascular system, as was already pointed out by Garrod in 1890 and more recently by Swift.

As etiologic factors in the production of rheumatic heart disease chorea and tonsillitis must be viewed as precipitating diseases, as well as rheumatic fever.

The age of onset of rheumatism is sometimes difficult to estimate, but in middle childhood it is not so often polyarticular in character, as it is more com-

monly accompanied by alleged "growing pains," myositis, and other fugitive metastatic areas of involvement. In the adolescent group the migrating polyarthritides becomes the dominant phase. Chorea, on the other hand, occurs more commonly between the ages of 5 and 10 years. Acute rheumatic fever likewise differs from chorea in that the primary cardiac insult is more likely to occur with the initial attack of rheumatism, whereas the evidence of cardiac disease in chorea usually develops after successive attacks.

It appears that all things considered the removal of foci of infection is associated with a drop in the incidence rate of recurrence; yet the latter is by no means uncommon.

When rheumatic patients are studied for a long period of time, the chronicity of the disease becomes strikingly apparent, many of them having recurrences of acute rheumatism after years of apparent health and freedom from symptoms. One of the strongest arguments for the chronicity of the disease is the Aschoff body. The progressive nature of the cardiac damage, the tendency to anemia and the recurrence of fugitive somatic symptoms likewise suggest the insidious and relentless nature of the process.

F. J. HIRSCHBOECK, M.D.

**ANGINA PECTORIS IN YOUNG PEOPLE:** White and Mudd (The Amer. Heart Jour., October, 1927). White and Mudd report eight cases of angina pectoris occurring in young people less than 30 years of age—an incidence not common but noteworthy because of its existence. Every case exhibited rheumatic aortic regurgitation, but evidence of aortic stenosis, mitral stenosis, acute infection or congestive failure was not constant. The association of angina pectoris and luetic aortitis, with or without aortic regurgitation, is well known. It may be that the responsibility for the attacks of angina in rheumatic heart, with aortic regurgitation, lies in the decrease in coronary circulation associated with a low diastolic pressure, or by involvement with a rheumatic aortitis or coronary arteritis. The attacks frequently came on without exertion, which seemed to play a lesser role in its production than in angina pectoris in advanced years. The authors believe that rheumatic infection of the arterial wall may possibly be a more important factor than the type of valvular disease, since it has been found in mitral stenosis, apparently without aortic valve disease in conjunction. The possibility must be kept in mind that with or without rheumatic or luetic infection, coronary thrombosis and sclerosis may occur in individuals under 30 years of age.

Postmortem examination should be carefully carried out in patients in the presclerotic group, as it may reveal material of interest in explaining and solving the difficult problem of the mechanism of angina pectoris.

Interestingly, the prognosis in young people with angina pectoris appears to be fairly good, the duration of life after the onset of the symptom of pain being

considerably greater than the average of large groups of all ages.

The article includes an extensive bibliography on the subject.

F. J. HIRSCHBOECK, M.D.

## SURGERY

### SUPERVISORS:

DONALD K. BACON,  
LOWRY BLDG., ST. PAUL

VERNE C. HUNT,  
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**SUBACUTE BACTERIAL ENDOCARDITIS WITH UNUSUAL VESICULOBULLOUS SKIN LESIONS: NECROPSY REPORTS IN TWO CASES:** Davis and Ayman (*The Amer. Heart Jour.*, August, 1927). The authors describe two unusual cases of subacute bacterial endocarditis which came under their observation. The remarkable feature of the disease was the presence of vesiculobullous lesions primarily involving the face, neck and scalp, and later by a secondary outbreak mainly confined to the extensor surfaces of the upper extremities. At necropsy typical vegetations were found on both mitral and aortic valves, and the streptococcus viridans was isolated from the vegetations of one case.

The Kahn and Wassermann tests were positive in both cases reported, but no evidence of syphilis was found on clinical or postmortem examination. The positive serology, they believe, should be considered as an incidental and secondary phenomenon of a disturbed colloid or lipid balance in the serum, as pointed out by Landau and Held.

The authors state that neither patient gave a history of rheumatic fever and postmortem revealed no evidence of old mitral disease, but the typical vegetation of subacute bacterial endocarditis was found on the mitral and aortic valves in both.

This report is of interest chiefly because it may indicate a trend toward the belief that subacute bacterial infection with streptococcus viridans may often be a pre-agonal infection, since it has been encountered in other debilitating conditions, and has been found before by Libman in acute disseminated lupus erythematosus. If this is true, the infection with the streptococcus viridans is incidental and not the primary condition. The two cases reported suggest the likelihood of the skin condition being primarily a pemphigus vulgaris.

F. J. HIRSCHBOECK, M.D.

### OXYGEN BY INJECTION

Experiments to determine the value of administering oxygen intravenously, intraperitoneally and subcutaneously on dogs are reported. Theoretically the oxygen tension of arterial blood can be raised by intravenous injection of oxygen. Practically, however, the oxygen deficiency is accentuated when this point is reached. Results from subcutaneous injection were even less encouraging. There was, however, sufficient absorption from intraperitoneal injection of oxygen to justify clinical experiment with the method. It would be necessary to control the procedure by arterial puncture and blood-gas analysis. (*Jour. A. M. A.*, December 17, 1927, p. 2120.)

**INCONTINENCE OF URINE OF RENAL ORIGIN:** R. Campbell Begg (*Brit. Jour. of Surg.*, Vol. XV pp. 229-243). An excellent discussion of incontinence of urine of renal origin, together with a report of one case, successfully treated by nephrectomy, is given. Technically the expression, incontinence of urine, is generally restricted to pathological leakage from the bladder.

The case reported by the author was one in a girl aged 6, who had a supernumerary right ureter emptying into the urethra, outside the bladder neck. A partial nephrectomy was first attempted but this proved unsuccessful, due to interference in the blood supply of the lower pole, so that total nephrectomy had to be performed.

The etiology of the condition is based on one component of a double ureter, or more rarely a single ureter emptying abnormally into the urethra or vestibule of the vagina. Embryologically this is explained by the fact that the Wolffian ducts enter into the formation of the vestibule and the urethra in the female. In cases of double ureter there are two renal buds arising from the same Wolffian duct. Ordinarily these buds lie close together, and the resulting ureteric orifices lie adjacent in the bladder. Exceptionally one bud develops much higher than the other and forms the upper pole of a double kidney. The ureter of the lower pole may empty into the bladder normally and the other ureter enters much later. Therefore its orifice is lower and may be in the urethra, vestibule, or Gaertner's duct.

Developmentally and practically it has been borne out that a ureter opening extravasically belongs to the upper pole of a double kidney, save those rare cases where a single ureter may open extravasically. Two cases of complete absence of the bladder are reported, in one of which the ureters entered the urethra and in the other the vestibule. This is explained by lack of expansion of the Wolffian ducts and their early fusion and descent, so that in one case they formed only the urethra and vestibule and in the other the vestibule alone.

The condition is commonly disregarded as a cause of incontinence and for that reason the actual number of cases reported is not a true index as to its frequency. The condition occurs exclusively in the female. Corresponding anomalies in the male—the ureter opening into the prostatic urethra, the vas deferens or seminal vesicles are not accompanied by any incontinence because the powerful external sphincter prevents it.

Pathologically only eight single ureters have been reported emptying extravasically; 42 cases were proved to be double. The right kidney is most frequently associated with the anomaly and the vestibule is the most common site of termination, and those cases in which the ureter was reported as emptying into the vagina were all in adult women, in whom the hymen was not intact. The ureter is practically always dilated and the reteral orifice often exceedingly hard to find. Infection is usually present in the affected kidney or half kidney; the younger the patient the less chance of infection. Diminished functional activity is also often present.

Symptomatically diurnal and nocturnal incontinence with regular normal micturition is characteristic. Diurnal incontinence is worse. The diagnosis is based on the history and cystoscopic findings. Plain x-ray plates will often hint as to the involved kidney. The kidney which is the largest and whose notch is not in the center is most likely affected.

Prognosis is good with early surgical treatment. Conservative surgical measures are rarely indicated and often lead to secondary operation and occasionally fatal results. In the majority nephrectomy or partial nephrectomy is the procedure of choice. In clean cases ligation of the ureter may suffice. If the kidney is performing a large share of renal function the ureter may be implanted into the bladder.

D. P. GREENLEE, M.D.

THE ASSOCIATION OF CHRONIC BRIGHT'S DISEASE WITH OBSTRUCTION IN THE LOWER URINARY TRACT: A. Ralph Thompson (Guy's Hospital Reports, Vol. LXXVII, No. 384, p. 464). This is a very short paper stating the following question: "Is it not possible that some cases of chronic interstitial nephritis are really associated with stricture of the urethra or some other form of chronic urinary obstruction?" The author answers the question by giving about fifty résumés of postmortem findings in cases of chronic nephritis in which there was some lower urinary tract obstruction associated. He states that we are often accustomed to hear of diminished renal efficiency without at all grasping what is the condition of the kidneys that may have given rise to the diminished functioning power. We are so accustomed to see cases of urinary failure associated with acute sepsis in the kidneys that many of us fail to realize that there is, in many cases, simple chronic interstitial nephritis which may be unequally distributed between the two kidneys. If we get rid of the irritative cause, such as enlarged prostate or stricture of the urethra, we do much to improve the condition.

The author states further that sufficient cases are noted to allow him to think that some forms of chronic Bright's disease may in fact be due to causes acting from below, thus bringing the chronic condition into line with the acute condition known as ascending nephritis of a septic nature.

P. G. FLOTHOW, M.D.

THE FORMATION OF A NEW VAGINA BY A NEW PLASTIC TECHNIC: Robert T. Frank and S. H. Geist (Amer. Jour. Obstet. and Gyn., 1927, Vol. XIV, 712-718). The two best accepted technics for the formation of a vagina in malformed individuals are the Baldwin method which utilized a double barrel segment of the small intestine (mortality 20.75 per cent) and the Popow-Schubert method in which the lower rectum is transplanted into the vulva, the upper rectal segment utilized for reestablishing continuity of the intestinal canal. Other less dangerous methods such as homoplastic transplantation of vaginal mucosa from other patients, Thiersch skin grafts, peritoneal transplants, et cetera, have given almost uniformly unsatisfactory results.

It seems unjustified to undertake such an operation when it involves grave risks. Occasionally in individuals, either married or with strong sex feeling, it seems justified to attempt to establish a vagina.

The authors describe a method by which a skin-tube is formed along the thigh and left attached at either end. After two weeks the distal end may be partially incised. The third step consists in establishing a canal in the recto-urethral vesicle septum; complete the cutting across of the distal end of the flap and splitting it; turning the pedicle through an arc of 180 degrees, folding it over an appropriate hollow vaginal plug with its raw surfaces outward; introducing the speculum and flap into the gap between the rectum and vagina; and uniting the free end of the anterior portion of the flap, whenever possible, with vulvar skin.

The speculum is removed in eight days and the proximal end of the flap is completely severed and the edge of the new vaginal tissue united to the vulvar edge.

The authors report one patient on whom this operation was performed with a good result after seven months. They recommend the method for further trial. It is devoid of danger and permits the using of healthy, well-nourished, fully mobilized skin flaps, devoid of hair.

HAROLD E. SIMON, M.D.

RUPTURED URETHRA: A NEW METHOD OF TREATMENT: Henry Banks (Brit. Jour. of Surg., Vol. XV, No. 58, pp. 262-263). This report is based on a study of three cases, upon which the writer operated successfully.

The method is described as follows: the bladder is opened suprapubically and a fully curved metal prostatic catheter is passed through the internal meatus along the urethra to the point of rupture and a second catheter of a similar type is passed through the external meatus along the urethra until it makes contact with the first one, end to end. The first catheter is then gently withdrawn and the second catheter pushed further in at the same time, being careful to keep the beaks in contact all the while. No force was used and in this manner it was possible to introduce the urethral metal catheter into the bladder. A self retaining rubber catheter is then attached to the end of the metal

catheter, which protrudes suprapubically. The metal catheter is then withdrawn through the external meatus and the rubber catheter is fixed in place. The bladder is closed and a small drain placed in the space of Retzius. Bladder lavage with boric solution is instituted the third day and about the tenth day the urethral catheter is removed.

The three cases operated were all similar in type, being crushing injuries to the pelvis, with rupture of the membranous urethra. All were operated within three hours of the time of injury and there was no urinary extravasation due to the fact that the patients had not attempted to void and that they were warned against voiding when first seen. All the cases did well and were all right three years after operation.

Regarding diagnosis the author states that failure to pass a catheter into the bladder is sufficient indication for surgery. He advises using a soft rubber catheter first and then a medium sized metal one. Bleeding from the external urethral meatus and perineal swelling were constant signs.

The method offers the following advantages over opening the perineum: (1) The operation can be performed rapidly; this is of importance, as most of these cases have multiple injuries and suffer from severe shock; (2) there is less formation of scar tissue at the site of rupture, and (3) drainage of the space of Retzius is provided for and sepsis does not occur.

D. P. GREENLEE, M.D.

**INDICATIONS FOR SURGICAL TREATMENT OF DUODENAL ULCER:** Lester D. Powell (Jour. of Iowa State Med Soc., 1927, Vol. XVII, pp. 348-352). Duodenal ulcer as a clinical entity has been recognized since 1817, although the surgical treatment was not instituted until many years later. Prior to 1881 the field of gastric surgery was practically unknown. Billroth and Wolfer performed the first successful pylorotomy and in 1881 Wolfer and Nicolandini performed the first gastro-enterostomy for pyloric obstruction, due to a non-resectable carcinoma. In 1886 Heineke and Mikulicz introduced pyloroplasty for the relief of benign pyloric obstruction.

With the increased frequency of operation for duodenal ulcer more came to be known about the pathology of such lesions. Surgeons learned that all patients could not expect to be cured by surgery and that some patients with apparently quite active symptoms would obtain relief from medical care.

The mere presence of a duodenal ulcer is not an indication for surgery. An uncomplicated duodenal ulcer with a short history in most instances improves rapidly with medical management. Surgery is contraindicated in neurotic, asthenic mentally or constitutionally inferior individuals in whom the symptoms are not marked, and in young individuals with a short history until medical treatment has failed.

The patients in whom surgery is always definitely indicated are those with symptoms complicated by hemorrhage, perforation, or obstruction. Hemorrhage rarely has to be treated as an emergency operation.

Cases with repeated hemorrhages should be transfused and operated immediately. Because of the fact that ulcers bleeding before surgical intervention have a tendency to bleed after operation, it is best to attack the ulcer directly by excision or cauterization. Perforation is the most formidable complication and requires early surgical intervention. A careful closure should be made of the perforation and a posterior gastro-enterostomy established immediately, if possible or at a later date.

Chronic obstruction from any cause requires surgical treatment. The more marked the obstruction, the more satisfactory are the results obtained from operation. These patients carry an increased surgical risk because of dehydration and lack of resistance, often associated with changes in blood chemistry typical of an alkalosis. The preoperative treatment consists of bed rest, frequent gastric lavage, forced fluids subcutaneously, rectally and intravenously.

Any one operation may be ideal for selected cases and unsatisfactory in others. In cases with acute inflammation, chronic indurated ulcers or ulcers with obstruction, gastro-enterostomy is the procedure of choice. Small superficial duodenal ulcers without obstruction, located on the anterior surface and near the pylorus, have been satisfactorily treated by simple excision of the ulcer and a portion of the pyloric sphincter. It appears to the conservative person that resection of the stomach is an extremely radical procedure in the treatment of duodenal ulcer.

Preoperative and postoperative medical management including dietary measures and the eradication of all foci, helps to obtain satisfactory surgical results.

HAROLD E. SIMON, M.D.

**THE ORIGIN OF RICE BODIES IN BURSAL SACS:** E. B. Mumford (Jour. Bone and Joint Surgery, 1927, 9, 381-386). Foreign bodies have been frequently found in synovial cavities. When these bodies have been numerous and lying free in the fluid they have been termed "rice bodies." In the bursal sacs they may be found when the chronic bursitis with its excessive bursal fluid has been caused by a low grade pyogenic infection, by trauma, or, more frequently, by tuberculosis. In all instances their formation is dependent upon the presence of some small nucleus about and upon which may be deposited fibrin derived from the bursal fluid.

The physical character of the rice body varies. The nucleus is frequently an isolated bit of fibrin. The author concludes, from a study of the bursal sac in cases of tuberculosis, that giant cells, which are pushed from the lower strata of the sac wall, losing their nuclei, are later liberated and form the nucleus for a rice body. Fibrin from the fluid is then deposited upon this giant-cell nucleus. Through constant rubbing against each other, these bodies become round or oval and may have facets or depressions upon their highly polished surfaces.

HAROLD E. SIMON, M.D.

THE RESULTS OF OPERATION FOR DUODENAL ULCER IN PHYSICIANS: D. C. Balfour (Ann. of Surg., Vol. LXXXVI, No. 5, p. 691). Balfour reviews the results of surgery for duodenal ulcer in one hundred physicians. This was done because it was felt that the operations were only done where clearly indicated as physicians and only after all medical means have been exhausted. Furthermore, since physicians have difficulty in carrying out a regular postoperative régime it was thought that results should be more than a fair test of the value of surgery.

Operations performed were posterior gastro-enterostomy, 89 per cent; excision alone, 6 per cent; anterior gastro-enterostomy, 3 per cent; and gastro-duodenostomy 2 per cent. The average age was 47; average duration of symptoms was 13 years and the average time since operation was  $8\frac{1}{2}$  years.

The results in posterior gastro-enterostomy were excellent. Complete relief of symptoms in 87 per cent and partial relief in 6 per cent. In five cases the result was complete failure; one of these developed a marginal ulcer which was operated upon and another as symptoms suggestive of marginal ulcer which are being controlled by diet. All of the three cases in which anterior gastro-enterostomy was done obtained complete relief, in two of them entero-anastomosis was also added. Taking these groups together, gastro-enterostomy was found completely successful in 90 per cent, partially successful in 5 per cent and failure in 5 per cent, although in three of the five cases of failure, symptoms were apparently due to some other condition, rather than the ulcer.

In the cases where excision only was done, 33 per cent or two cases obtained complete relief. One case required further operation, one case was a complete failure, and two cases gave symptoms suggestive of gall-bladder disease.

In the two cases where gastroduodenostomy was done, one case obtained relief, the other required a second operation.

Taking the one hundred cases as a whole, 84 cases obtained complete relief, 6 incomplete, but considered the operation worthwhile, so that 90 per cent may be classed as successful. Five cases required second operation—two for hemorrhage, one for reactivation of ulcer and 2 for gastrojejunal ulcer; three of these five have complete relief since second operation and in two it is too early to tell. In five cases the result was complete failure, one of which is an inoperable carcinoma of the stomach, one marginal ulcer and three cases where no relief was obtained. The results of conservative operation followed by second operation where needed are satisfactory in 93 per cent. The source of this information seems to indicate that conservative surgery is the sound attitude to take in duodenal ulcer cases.

P. G. FLOTHOW, M.D.

## PEDIATRICS

### SUPERVISORS:

CHESTER A. STEWART,  
LA SALLE BLDG., MINNEAPOLIS

ROY N. ANDREWS,  
MANKATO CLINIC, MANKATO

EFFECT OF THERAPEUTIC DOSES OF ULTRAVIOLET RADIATION ON BASAL METABOLISM IN CHILDREN: Margaret E. Fries, M.D. (Amer. Jour. of Diseases of Children, August, 1927). It has been assumed that there is a rise in basal metabolism following ultraviolet irradiations. The increase in blood calcium and in phosphorus is well known. The general improvement in the patient's condition, such as increase in appetite, gain in weight and improved sleep, has been observed.

Three children in the hospital and two in the outpatient department were treated with ultraviolet radiations three times a week.

Determinations of basal metabolism were made from twenty to seventy hours following treatment.

The basal metabolic determinations did not vary more than 10 per cent, except in the second series of treatments in an ambulatory case. As not all conditions could be controlled in the ambulatory cases, the decline that occurred in this case cannot be attributed solely to the ultraviolet radiations.

Ultraviolet radiations did not cause any change in basal metabolism, except in one child. It seems justifiable to assume that a series of treatments with ultraviolet radiations will not affect the basal metabolism of the majority of children.

R. N. ANDREWS, M.D.

PREMATURE INFANTS: Julius H. Hess, M.D., and I. McKy Chamberlain, M.D. (Amer. Jour. of Diseases of Children, October, 1927). In the first class may be included various injuries, falls, heavy lifting, overwork, or other physical exhaustion and sudden emotional disturbances. The conditions that fall within the second category all react to a greater or lesser degree on the fetus, some producing only momentary weakness, as the milder acute infections, and others causing a weakened physical condition as a result of their long-continued action on the nutrition and development of the fetus.

The higher mortality of the group of infants born at home indicates the importance of early care and especially of maintenance of a nearly normal body temperature. Transportation was undoubtedly a large factor.

The great majority of the infants are fed with a medicine dropper until they are strong enough to take

food from a bottle. Catheter feeding is instituted when indicated, when the infant is unable to swallow properly or when feeding by the dropper precipitates attacks of cyanosis. Therefore, a regular feeding regimen must be started early. Human milk is essential to a low mortality. Practically all infants at first receive eight feedings daily.

Further fluids, preferably inert, such as water or 1 per cent lactose solution, are administered to compensate for the loss of body fluids through the kidneys, bowels, lungs and skin. The infant requires about one-sixth of its body weight of water, inclusive of that contained in the milk, in twenty-four hours while in the heated bed. By the fourth day approximately one-seventh of the body weight of fluids and human milk of a food value of 70 calories per kilogram every twenty-four hours are required to maintain life.

To fulfill all their needs, infants will therefore require from 140 to 200 c.c. of breast milk per kilogram, or about one-seventh to one-fifth of their body weight daily.

#### ARTIFICIAL FEEDINGS

No comparison can be made of the results to be expected from human milk and those to be obtained with artificial food, such as limited chymogen milk, skimmed and whole cultured lactic milks and boiled skim and whole sweet milks. Orange juice, 8 drops daily and increased; cod liver oil, 8 drops daily and increased. More recently the author has added raw egg yolk to the breast milk or artificial feeding to meet the iron requirements of these infants. Exposure to the quartz light is given daily, as early as the third week, the time of exposure being dependent on the individual infant.

R. N. ANDREWS, M.D.

**THE EARLY OCCURRENCE OF GASTRIC HEMORRHAGE IN CHILDREN WITH SPLENOMEGALY:** Richard M. Smith, M.D., and Philip J. Howard, M.D. (*Amer. Jour. of Diseases of Children*, October, 1927). The primary diseases of the blood, notably purpura and hemophilia, and occasionally scurvy and malaria, are accompanied by gastric bleeding. Gastric ulcer in children is rare, but does occur. Severe bleeding from varicose veins of the stomach or esophagus is not uncommon in Banti's disease, splenic anemia or thrombophlebitis of the portal and splenic vein.

Symptoms common to all: A child previously well suddenly vomits a large amount of bright and clotted blood. Physical examination reveals no evidence of disease except a secondary anemia. Examination made somewhat later shows marked enlargement of the spleen.

The explanation for this symptom-complex is not entirely clear, but it seems to us that probably it depends on some condition that causes obstruction to the splenic vein. That thrombosis of the portal vein may occur secondary to infection in some other part of the body and that an enlargement of the spleen and gastric

hemorrhage may result from this condition are well recognized. The decrease in the size of the spleen after hemorrhage and its subsequent increase in size were striking in the author's two recent cases and are recorded in connection with many of the case reports collected by Wallgren.

Immediately following a hemorrhage, transfusion is indicated. The etiology of this condition is best explained on the basis of obstruction to the splenic vein which produces chronic passive congestion of the spleen and distention of the gastric and esophageal veins, and in the veins in the adhesions between the spleen and the stomach or diaphragm. Thrombophlebitis of the splenic vein is an important cause of venous obstruction. Splenectomy offers a means of controlling the hemorrhage and, so far as the author's observation goes, of effecting a cure of the disease.

R. N. ANDREWS, M.D.

**PULMONARY TUBERCULOSIS IN INFANTS—Bacteriologic Diagnosis by Examination of the Stomach Contents:** P. F. Armand-Delille, M.D. (*Amer. Jour. of Diseases of Children*, October, 1927). Many pediatricians and phthisiologists regard the diagnosis of pulmonary tuberculosis in infancy and in childhood as impossible or at least difficult.

About thirty years ago, Dr. H. Meunier of Pau, France, showed that it is possible to obtain the sputum of an infant if one lavages the stomach early in the morning, just after the first cough and before the first meal. The author's technic is as follows: About 80 c.c. of tepid water is introduced into the stomach and withdrawn by siphoning.

If characteristic sputum is obtained, direct microscopic examination by the Ziehl-Neelsen method is all that is necessary, but in most cases homogenization is required. The liquid is centrifugalized in four tubes and the precipitates united in a porcelain dish to which is added 30 c.c. of water and 10 drops of normal sodium hydroxide; the whole is heated for ten minutes, 50 c.c. of water being added slowly. If the specific gravity is over 1.004, a little alcohol is added. The material is again placed in four tubes, and centrifugalized for forty-five minutes, and the precipitate is stained by the Ziehl-Neelsen method.

The results obtained by this method have been interesting. In sixty-two cases in which only the direct examination without homogenization was used, tubercle bacilli were found in only 10 per cent, while in 110 cases in which the method here detailed was employed, 31 per cent were positive.

R. N. ANDREWS, M.D.

**THE PREVENTION AND CONTROL OF RESPIRATORY DISEASES IN THE YOUNG:** Jacob Sobel, M.D. (*Arch. of Ped.*, December, 1927). Diseases which involve the respiratory apparatus comprise about

per cent of all cases. One-fifth of all deaths under one year of age and some one-fourth to one-third of deaths in children under five years of age are chargeable to the diseases of the respiratory tract. The prevention and control of respiratory diseases are bound up with every member of the household. A person with an acute or subacute coryza is only too often publicly at large and each in his own way acts as disseminator of infection. Over and above all, the importance of taking to bed immediately upon the onset of any acute condition of the respiratory tract no matter how minor or trivial and remaining there until well. A cold in the nose in infancy and early childhood is dangerous because of the greater tendency of the process to extend downward to the lower respiratory passages.

It therefore appears from a scientific as well as from a practical standpoint, that chilling of the body surfaces, whether because of increased local congestion or ischemia, is a predisposing factor to the development of respiratory involvement, in that it produces conditions favorable for bacterial attack.

The mortality of bronchopneumonia is 40 per cent. The cost of ignoring the common cold is too high.

All diseases which are nutritional or metabolic in their origin carry with them a reduced vitality or resistance and thereby an increased susceptibility to respiratory infection.

A goodly number of post-operative pneumonias are preventable. Chilling of the body and anesthesia are a vicious combination. Prevention is more a matter of education than of medication, compulsion and legislation, for it is hard to legislate righteousness, common sense or the golden rule into most people.

R. N. ANDREWS, M.D.

**THE VALUE OF EARLY DIAGNOSIS AND TREATMENT IN ENLARGEMENT OF THE THYMUS GLAND:** Robert P. Sturr, M.D. (Arch. of Ped., December, 1927). The thymus is closely related to various disturbances of nutrition and metabolism and especially those concerning the ossification of the bony structure. The author feels that rickets and thymic changes are very closely allied, and more frequently than is realized the two are present.

Two essential types of symptoms are noted: (a) the respiratory type due to direct pressure on the adjacent structures, especially the trachea. (b) The toxic type or circulatory type, given general symptoms and physical findings, and not in the vicinity of the thymus itself.

The persistent formation of mucus in the pharynx and trachea is a constant pressure symptom. A hoarse spasmodic cough frequent both day and night, in severe cases. At times breathing seems to be an effort, with stridor during inspiration which is deep and labored. Holding the breath is a very common and early symptom. This type of thymus is dangerous to life and prompt and efficient action must be taken in its diagnosis and treatment.

Attacks of choking were noticed in 10 per cent of the cases studied. General or toxic symptoms—under this

heading came about 40 per cent of the cases studied. The child shows every evidence of a marked and intense toxicity.

The normal thymus will extend about  $\frac{1}{2}$  cm. beyond the lateral margins of the spine on each side. Anything beyond this was considered to be pathological and enlarged.

X-ray therapy is by all means the method of choice in enlargement of the thymus. Regeneration of the thymus gland is frequent and the patient should have a re-examination at varied intervals.

R. N. ANDREWS, M.D.

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## EYE, EAR, NOSE AND THROAT

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### SUPERVISORS:

VIRGIL J. SCHWARTZ,  
PHYS. & SURG. BLDG., MINNEAPOLIS

E. L. ARMSTRONG,  
205 W. 2nd STREET, DULUTH

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**ACUTE OTITIS IN INFANTS:** L. W. Dean (Arch. of Otolaryngology, September, 1927). It is a common observation in both the Pediatric and the Otolaryngologic services of the State University of Iowa that acute otitis in infants may cause refusal of food. In the absence of other symptoms or of otologic indications, refusal of food is, in many cases, sufficient reason for performing myringotomy. Middle-ear infection is frequently an etiological factor in malnutrition and loss of weight, in cholera infantum, mastoiditis and syncopal attacks.

Dean says: "The majority of infants with acute otitis whom I see have marked otologic symptoms. The drum head usually presents a change in color; the short process is apparently shorter than usual; the light reflex is distorted, and there is a slight bulging of the posterior superior quadrant or of the posterior wall of the canal. I always perform a myringotomy and wait for a report from the pediatrician before performing a mastoidectomy, unless the pediatrician says the case is so critical that the best drainage of all infected cavities must be secured immediately. If I perform a myringotomy, and at the end of forty-eight hours the infants is no better, the decision as to whether or not drainage of the mastoid should be performed is decided by the otologist and pediatrician in conference."

Dean concludes: "(1) The symptoms which lead to the discovery of otitis in infants are much more frequently pediatric than otologic; (2) the otologist and the pediatrician should work in the closest coöperation and have complete confidence in each other; (3) if otitis is present, it can always be diagnosed; (4) paranasal sinus disease usually coexists with acute otitis; it is as a rule advisable to treat the patient for both. It is often difficult to decide which is the more influential in causing the systemic disturbance."

F. W. BRIGGS, M.D.

## BOOK REVIEWS

Books listed here become the property of the Ramsey and Hennepin County Medical libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

### BOOKS RECEIVED FOR REVIEW

- THE PREVENTION OF PREVENTABLE ORTHOPEDIC DEFECTS, WITH SPECIAL REFERENCE TO THE SPINE AND THE FEET.** S. C. Woldenberg, B.Sc., M.D., M.Sc., Attending Orthopedist, Post Graduate Hospital and Michael Reese Dispensary, Chicago. 120 pages. Illus. Cloth, \$2.00. Saint Paul: Bruce Publishing Company, 1927.
- THE EXTRA-OCULAR MUSCLES.** Luther C. Peter, A.M., M.D., Sc.D., Prof. of Diseases of the Eye, Postgraduate School of the University of Pennsylvania, etc. 294 pages. Illus. Cloth, \$4.00. Philadelphia: Lea & Febiger, 1927.
- X-RAYS AND RADIUM.** George M. MacKec, M.D., Prof. and Director of Department of Dermatology and Syphilology, New York Post Graduate Medical School and Hospital. 788 pages. Illus. 2nd edition, revised. Cloth, \$10.00. Philadelphia: Lea & Febiger, 1927.
- POLIOMYELITIS.** W. Russell MacAusland, M.D., Surgeon-in-Chief, Orthopedic Department, Carney Hospital, Boston. 402 pages. Illus. Cloth, \$5.50. Philadelphia: Lea & Febiger, 1927.
- THE CURRENT SIGNIFICANCE OF THE WORD "ALUM."** William D. Richardson. 93 pages. Cloth, \$1.00. Chicago: The Commonwealth Press, Inc., 1927.
- INTERNATIONAL CLINICS.** Vol. IV. 37th Series. Henry W. Cattell, M.D., Editor. 309 pages. Illus. Philadelphia and London: J. B. Lippincott Co., 1927.
- 
- THE SHIP SAILS ON.** Nordahl Grieg. Translated from the Norwegian by A. G. Carter. 219 pages. \$2.50. New York: Alfred Knopf, 1927.
- This is a story of the sea, told in a most realistic manner, with no sentiment nor romance, but with a clarity and sincerity that has a definite appeal. It is not a pleasant story, at times it is definitely sordid, but it contains truth, a certain philosophy and a portrayal of the peril of venereal disease. With the crew, we live the life at sea, isolated from the world, and the life there we find to be one of minor incidents, of love and of hate, of tragedy and comedy just as we find life anywhere. Woven with the thread of the story is the shadow of venereal disease which touches the lives of the men, one by one, and entirely changes them.
- Benjamin, seaman ordinary, nineteen years old, in the struggle between "life's happiness and life's adventure" decides to go to sea, to see what it is like before he settles down to business. To his young, enthusiastic, romantic eyes, life on shipboard in the southern seas is one of glorious adventure and he loves his shipmates and the ship herself with a great love. At the same time he acquires the philosophy of the sea and accepts it. "A man's life drifts away like a puff of breath. . . . A life or two, a sorrow, an accident, all is left behind, all is forgotten. The ship sails on. . . . Each of us stands at his wheel toiling and sweating and keeping it going, the noise of it roaring over the earth until we are tired to death; then we drop and fresh hands clutch greedily at the wheels and drive them on like madmen, on and on forever, but why? And they would all answer triumphantly as our man: 'We're keeping the machinery going.'"
- After thirty days at sea they land at Cape Town, and bitterly disappointed at no letter from his sweetheart Benjamin goes ashore with his mates for a night of debauch, and returns the next morning, cynical, disillusioned, hating himself, with his youth left behind him. The next day brings the long expected letter but his joy and plans for a better life are overturned when he finds that he has contracted a venereal disease, presumably syphilis. He determines to kill himself and taking the ship's little dog, who is also ill, he prepares to jump into the sea. But his courage fails him and he returns to his mates with hatred in his heart toward them, toward himself and toward the ship which he had loved.
- MARGARET WARWICK, M.D.
- 
- INTERNATIONAL CLINICS,** Volume 4, 1926, Volumes 1 and 2, 1927. Henry W. Cattell, M.D., Editor. Philadelphia and London: J. B. Lippincott Co., 1926-1927.
- These volumes are intensely interesting, well written, well illustrated and must be read to be appreciated. The subjects are practical but heterogeneous and of so great a variety that individual mention of them cannot be made. They are recommended as an excellent review of recent progress in various phases of medicine and should be so regarded, rather than as a reference work.
- OLOF I. SOHLBERG, M.D.
- 
- MINERAL WATERS OF THE UNITED STATES AND AMERICAN SPAS.** William Edward Fitch, M.D., Member of the International Society of Medical Hydrology; The American Medical Association; The Medical Association of the Greater City of New York, Etc; Late Major Medical Corps of the U. S. Army; Formerly Lecturer on Surgery, Fordham University School of Medicine; Assistant Gynecologist O. P. D. Presbyterian Hospital; Attending Physician, Vanderbilt Clinic, College Physicians and Surgeons, N. Y. City. Illustrated. Philadelphia and New York: Lea & Febiger, 1927.
- This monograph deals with hydrotherapy and all its phases, and gives a somewhat detailed discussion of many diseases which the author feels are best treated by hydrotherapeutic means. There is an excellent discussion of radio-active waters. The author feels that

nt treatment with bottled radio-active waters is inferior to the use of fresh water. Inasmuch as now that the active life of radium emanation covers only a period of about three days, it is obvious that shipped any distance cannot be radio-active. There is an excellent chapter on external hydrotherapy which every one should read—in particular, the sessions of whirlpool bath, the wet-sheet pack, the internal douches, and Nauheim bath.

The major portion of the book is devoted to a detailed discussion of American Spas, the chemical and physical characteristics of the water and the accommodations for guests. The author feels that many American Spas are at least equal to those of Europe and suggests a study on the part of physicians of these American Spas instead of reference of the patient to those of Europe.

WANTED—Salaried appointments for Class A Physicians in all branches of the medical profession. Let us put you in touch with the best man for your opening. Our nation-wide connections enable us to give superior service. Aznoe's National Physicians' Exchange, 30 North Michigan Ave., Chicago. Established 1896. Member The Chicago Association of Commerce.

WANTED—Assistant about thirty years of age or older to work for two physicians. Must have pleasing personality. Expect him to do night work and help in office. Salary \$250 per month to start. A knowledge of German or Scandinavian is of advantage. Address C-157, care MINNESOTA MEDICINE.

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The office equipment of the late Dr. E. M. Clay, of Hutchinson, Minnesota, including therapeutic lamp, vi-ray machine, optical case, and office supplies, is offered for sale. Also a good opening for a physician. Address Mrs. E. M. Clay, Hutchinson, Minn.

FOR RENT—Office space with Minneapolis oculist, suitable for young dentist, physician or oculist. Address C-159, care MINNESOTA MEDICINE.

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OFFICE SPACE FOR PHYSICIAN for rent, 323 LaSalle Building, Minneapolis. X-ray and laboratory facilities available. Telephone Main 4378 or call at office.

POSITION WANTED—As assistant in doctor's office or clinic in Minnesota or surrounding territory. Registered nurse with postgraduate training in pediatrics, physiotherapy and orthopedic surgery. Address C-164, care MINNESOTA MEDICINE.

LOWRY BUILDING—Want physician to share nicely furnished, well lighted and arranged office. Reception and examining rooms. \$25.00. Address C-163, care MINNESOTA MEDICINE.

POSITION WANTED—In small hospital or doctor's office in Minneapolis or Saint Paul as office assistant. Nurse's training and practical experience in hospital. Address C-162, care MINNESOTA MEDICINE.

# MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

## PHYSICIANS LICENSED AT THE OCTOBER, 1927, EXAMINATION TO PRACTICE IN MINNESOTA

### BY EXAMINATION

NAME	MEDICAL COLLEGE	ADDRESS
Allan, Frank Nathaniel.....	U. of Toronto, M.B. 1922.....	Rochester, Minnesota.
Brabec, Paul Frank.....	Iowa State U., M.D. 1926.....	Perham, Minncsota.
Danzer, Jos. Theo.....	St. Louis U. Sch. of Med., M.D. 1927.....	Shriners' Hospital, Minneapolis.
Foster, Wilmot Coyne.....	U. of Oregon, M.D. 1920.....	Rochester, Minnesota.
Groves, Morton Wm.....	Ind. U. Sch. of Med., M.D. 1926.....	2832 Blvd. Place, Indianapolis, Indiana.
Hanson, Everett Carlyle.....	U. of Minn., M.B. 1927.....	Ancker Hospital, St. Paul, Minnesota.
Holland, Wilbur Wallis.....	U. of Pa., M.D. 1925.....	Rochester, Minnesota.
Jennings, Frank LaMont.....	Syracuse U., M.D. 1913.....	Oak Terracc, Minnesota.
Lindstrom, Everett H.....	U. of Minn., M.B. 1927.....	Swedish Hospital, Minneapolis.
Macnie, John Percival.....	Harvard, M.D. 1925.....	2424 Lakc Place, Minneapolis.
Mayo, Chas. Wm.....	U. of Pa., M.D. 1926.....	Rochester, Minnesota.
McLeod, James Lawrence.....	U. of Manitoba, M.D. 1926.....	Bovey, Minncsota.
Norment, Wm. Blount.....	Jefferson, M.D. 1922.....	Rochester, Minnesota.
Partch, Wallace Taylor.....	Rush, M.D. 1926.....	Rochester, Minnesota.
Prout, Curtis Tuttle.....	Cornell, M.D. 1924.....	Rochester, Minnesota.
Rempel, Dietrich D.....	Imperial U., Jurjcw, 1918.....	Butterfield, Minnesota.
Rohwer, Roland Theodore.....	Creighton, M.D. 1924.....	Rochester, Minnesota.

### BY RECIPROCITY

Bunten, Wm Andrew.....	U. of Nebraska, M.D. 1922.....	Rochester, Minncsota.
Dawley, Walter A.....	U. of Ill., M.D. 1926.....	Rochester, Minnesota.
Evans, Edward Thompson.....	Harvard, M.D. 1922.....	2423 Irving Ave. S., Minneapolis.
Heimdal, Clarence Oliver.....	Rush, M.D. 1926.....	Rochester, Minnesota.
Parson, Geo. Washington.....	Med. Col. of Va., M.D. 1922.....	Rochester, Minnesota.
Ruby, Fred McKemy.....	U. of Mich., M.D. 1905.....	Hibbing, Minnesota.
Scholl, Marguerite Julia.....	{ U. of So. Cal., M.D. 1921 } { U. of Minn., M.D. 1927 }	Rochester, Minnesota.
Troup, Ralph Leslie.....	U. of Nebr., M.D. 1921.....	Rochester, Minnesota.

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Fowler, Louis McCargo.....	U. of Pa., M.D. 1924.....	Rochester, Minnesota.
Mahorner, Howard Raymond.....	U. of Pa., M.D. 1925.....	Rochester, Minnesota.
Priestley, Joseph Biddle.....	U. of Pa., M.D. 1925.....	Rochester, Minnesota.
Sussex, Lloyd Thomas.....	Northwestern, M.D. 1926.....	Rochester, Minnesota.

# MINNESOTA MEDICINE

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## WHAT IS A MEDICAL EXPERT?

ARTHUR SWEENEY, M. D.  
*Saint Paul*

THE answer is very simple. There is no such animal. The phrase is in common use and is supposed to apply to doctors and other scientific men who have more knowledge than their fellows on a given subject. There may be experts in other professions but surely there are none in medicine. Any doctor, no matter how wise or ignorant, no matter how honest or dishonest, can qualify before our courts as an expert. "Where and when did you graduate?" "Are you duly licensed to practice your profession in this state?" These are the two questions asked by the lawyers to qualify the doctor as an expert. If further information is insisted upon, he is asked if in his practice he has "frequently treated cases similar to the one under consideration." If the doctor replies in the affirmative, he is qualified. In other words, the doctor is an expert because he admits it. Such admission does not make him an expert any more than the admission by a person that he is a humorist makes him one. The courts are bound to accept this self-laudation as a fact and, with unbending gravity, the judge, just as if he didn't see the joke, permits the most ignorant medical ass to give his opinion to the jury with the same weight as if Hippocrates himself was talking.

The medical expert is a legal fiction. The idea in law dates from the time when doctors wore watch fobs, stove-pipe hats and ivory headed canes. In those days dignity and pose were valid substitutes for medical knowledge. The very dignity with which our judges are clad enveloped with a mantle of wisdom their fellows of the allied profession. The function of the expert was to bring to the ignorant jurors that erudite solution of medical mystery which was supposed to be beyond the common sense of the average juror. And so expert was arrayed

against expert. Confused in the maze of verbose technicalities, the jury decided the case largely upon the adroitness, glibness or plausibility of one of the experts.

In these latter days when osteopaths and chiropractors are licensed to practice in most states, they also have arrived at the dignity of medical experts. The fact that the law has recognized them gives them a standing in courts not inferior to that of the medical profession. I have heard them talk of subluxations, dislocations of vertebræ, impingements on nerves and other absurd pathology as the cause of neurasthenia, hysteria and cerebral hemorrhage and the jury takes it all with the same weight as opinions of physicians. All horses look alike to a blind man and so far as the average juror is able to distinguish between the various schools of practice, he might as well be blind.

All experts are the same to the juror. In the Thaw case a "distinguished" psychiatric expert was unable to tell what an Argyll-Robertson pupil or a Romberg sign was. An expert, in my hearing, said that the esophagus passed through the foramen magnum. Another identified the sacro-iliac synchondrosis in an x-ray picture as two symmetrical fractures of the pelvis. Another said that the highly arched palate of an accused murderer, by pressing on the base of the brain, had produced imbecility. Another said that a slight blow on the head had so lowered the vitality of the injured woman as to lead to the development of cancer of the stomach. I could go on indefinitely testifying to the inexpertness of the expert, but probably you all have had similar experiences.

We must get rid of the obsolete, useless and misleading term of expert and substitute for it the logical term of medical witness. There is

really little difference whether the medical witness testifies to fact or opinion, providing the doctor is honest and realizes that his sole function as a witness is to put such facts as are within his knowledge before the jury, and to give only such opinions as will enlighten the jury on technical matters and help them to reach a just verdict. The present custom of using doctors as assistants to the attorneys in winning the case, though much to be condemned, can hardly be remedied, because under the present system of court procedure, where the lawyers are engaged in a contest to win a verdict rather than to secure justice, it is inevitable that they should seek from the doctor only those facts and those opinions which favor their sides. They do not want the "whole truth" nor are they particular in getting nothing but the truth.

Although using doctors for their own base purposes, they are not at all complimentary to our profession, but poke fun at us because our opinions vary so widely. To my mind it is rather remarkable that upon medical questions we differ so little. In every lawsuit there are two lawyers who differ pugnaciously upon the facts and law involved in the case. Certainly medical men are not more divergent. Lawyers denounce opinion evidence in profane terms, and yet they accept without remark testimony as to fact, which in my view is much less trustworthy. In a case of a murder in St. Paul which took place in a butcher shop in the month of February, when the thermometer registered between twenty and thirty degrees below zero, five witnesses who passed the butcher shop testified that on that day they saw through the windows certain persons in the shop. The defense brought six witnesses who swore that they passed the place at the same hour and that the windows were so completely covered with frost that nothing inside was visible. Testimony as to fact, in regard to the average personal injury suit, is always discordant. Two persons witnessing an accident from the same point will tell different stories about it. Since the memory and observation of concrete events is so full of contradictions, why are our lawyer friends so sneering or sarcastic when two physicians differ in opinion on abstract matters?

Medical testimony can never be regulated. It cannot be changed except by public opinion, which will ultimately be educated to condemn the

dishonest and approve the honest medical witness. Various resolutions by medical societies to change the method of legal procedure, to have "experts" chosen by the judge or by agreement among the lawyers, emphasize the pathetic helplessness of the profession in regulating the practice of law. As well ask the lawyers in to settle our ethical disputes. It is a good bet that the lawyers don't want the system changed. The lawyers as well as the doctors suffer from dishonest men in their ranks, and it appears to me to be an even break.

Medical testimony in personal injury cases is seldom effective. It rarely happens that, in cases in which the medical facts are not objective, the jury is able to comprehend the opinions of the doctors. It is apparent that where an arm or leg is amputated the jury can measure its value in currency; but in those cases in which the injury is not so obvious, such as strains of the back, sacro-iliac injury, neurasthenia, hysteria, paralysis and malingering the jury is wholly at sea. They know nothing of the pathology or psychology of the cases, they are unable to determine the nature of the symptoms, they cannot estimate the prognosis, and when, as happens in most cases, they find a disagreement among the doctors, they utterly disregard the medical opinion and decide upon the probability or absurdity of the claims made by the plaintiff.

Let us suppose that a jury composed of twelve doctors was called to sit on a case in which there was a question of infringement on a dye process, and it had to listen for several days to the opinions of six expert chemists on each side. In what frame of mind would the medical jury find itself, and how much more intelligent would be its verdict than the verdict rendered by the laity in complex medical cases? The tendency of the juries to throw out all expert testimony would be equally strong in both cases. We must appreciate that expert testimony is not always used to instruct the jury, but is too often used to persuade them in one direction or another.

Why do juries fail to give due weight to medical testimony? The reasons are many. Principal among them is the fact that most juries are decidedly inferior in intelligence. They represent the average run of people. They are in some cities selected by taking the sixth or tenth name in the page of a city directory opened at random, with the idea of avoiding selection, and

of obtaining an average jury by chance. In small towns the registered voters are selected by lot to act as jurors. In this way the trial of law suits by intelligent, selected jurors is avoided and a jury that represents the average intelligence of the community is secured.

What is the average intelligence of our juries? If the psychological tests of the army are to be relied upon, the average intelligence of the people of this country is between twelve and thirteen years. Twenty-two per cent of them are in the feeble-minded and moron classes, and 20 per cent in addition are in the dull normal class, giving a total of 42 per cent who in industry grade as common labor or less and who cannot progress beyond the seventh grade in school. In the army 24 per cent were illiterates when judged by their ability to read an article in the newspapers and to write a letter to their folks at home. Of the recruits who were born in foreign countries, 45 per cent were under eleven years of mental age and could not advance beyond the fifth grade in school. These tests were applied to two million men carefully selected by local examining boards and represent a higher type than the general public. It is not improbable that at least 50 per cent of the general public are juvenile mentally, and are incapable of bringing to the consideration of any question, however important, more intelligence than is found in a twelve or thirteen year old child.

A jury which represents the average intelligence, therefore, must be lacking in that acuteness of perception which would enable it to discriminate between varying facts that are called to its notice. It would manifestly lack that power of sustained attention which would form the basis of a proper comparison of facts. It would also be deficient in associative memory, by which it could line up the testimony of one witness with another. As our judgments are based in a large degree upon these three faculties, it will be recognized what a handicap the average jury must be laboring under in the consideration of any but the simplest and most objective of problems. How far into their consciousness does medical testimony penetrate? What to them are the fine niceties of diagnosis? How much do they comprehend of pathology? How very elementary must be their reasoning upon the relation of cause and effect in a given case?

Scrutinize the faces of the average jury when

a medical witness is on the stand. Is their expression one of absorbed attention or of blank stupidity? Are they thinking or just appearing to think? Well behaved, orderly, decorous as if in church they sit with owl-like gravity listening to words they do not understand about medical facts which they cannot comprehend. And yet they look, and are, as wise as owls.

In addition to the low average intelligence of juries, there is another factor quite as important that influences their verdicts. I refer to their emotional nature. While the finer emotions are not characteristic of those of low intelligence, the primitive emotions are very strong. Sympathy for the unfortunate is apt to be strongly manifest in personal injury cases. The lawyer for the plaintiff skillfully sees to it that the agonies of the injured awaken a tender response in the hearts of the jury by oratory of the sympathetic type. Unable adequately to intelligently reason about the facts, the jury is extremely responsive to the tender appeal of sympathy. Prejudice is another emotion that is active in these cases. The resentment of the injured at the carelessness of the defendant, is easily transferred to the jury, especially if it be a soulless corporation that is to blame.

At a scarcely less disadvantage the doctor appears in the courtroom. However intelligent he may be at the operating table or the bedside, he does not shine conspicuously on the witness stand. His appearance indicates nervousness, timidity and apprehension. Although vociferous in ordinary conversation, his voice deserts him and he can be heard with difficulty by the jury or the lawyers. His professional manner of speech clings to him and he uses technical language. He calls a joint an "articulation" or a "synchondrosis"; he talks of the "terminal phalanges" instead of the last joints of the toes; he prefers the term "ptosis" to the more comprehensible word drooping of the lid; he chooses "emesis" rather than vomiting, "ecchymosis" rather than black and blue and in general surrounds a description of simple injury with a polysyllabic barrage. No wonder the jury wears an adenoid expression!

Clearness of thought and expression is possessed by few medical witnesses. There is generally a muddy conception of the facts and a foggy expression of them which renders his testimony ineffective and tiresome. He usually

lacks order in the narration of symptoms and is illogical in his deductions. Omitting important facts, he stresses the less vital elements of the case, and either exaggerates or minimizes the seriousness of the injury.

On cross examination the medical witness is at his worst. He is afraid that the lawyer will tangle him up and make him appear ridiculous. He therefore adopts a hostile attitude, argues with the lawyer, is evasive in his answers to questions or hides behind technicalities. Afraid to say "I don't know," he stumbles into difficulties and traps that are laid for him. He becomes transformed from a witness whose function it is to instruct the jury as to the medical facts of the case, into a defender of his opinions or into an assistant counsel for his side of the case. The jury is quick to see this attitude of prejudice, and to recognize in his evasions and arguments a lack of that fairness expected in a medical witness. He seems to be unable to reason with any clearness when on the stand, and becomes a victim of the excitement and confusion.

However honest a medical witness may be, if he fails to get across to the jury the facts of a case and his opinion of it, his testimony goes for naught. He should never forget the low grade of intelligence possessed by the average jury, and should frame his testimony in words and phrases in the common knowledge of children. He should be careful not to outstrip their power of comprehension. While obviously the lawyer is the central figure in the trial, the jury is the one that decides the issue, and to them the testimony should be directed. If I should be asked to name the greatest fault of the medical witness it would be talking over the heads of the jury.

Unfortunately not all medical witnesses are honest. Many lend themselves to the purposes of unscrupulous lawyers, and frame up cases for them. I remember a case in which unequal pupils were an important factor. The doctor in charge of the case subsequently boasted of the way he had fooled me by dropping a little atropine in one eye. Another doctor testified to the classical epileptic seizure which he had witnessed in an injured man, and subsequently admitted that it was made out of whole cloth, and that the plaintiff had never had a fit. In another case the doctor had drilled the patient to simulate paraplegia with such skill that only the indiscreet conduct of the plaintiff, who was observed walking at night, revealed the deception. I could narrate many experiences in which I have found cases that were framed by medical men. I presume that there is the same amount of dishonesty among doctors that there is in the ordinary run of professional men. Honesty is an individual rather than a professional trait.

To sum up, the medical "expert" is not an expert; he is a medical witness. His function is to instruct the jury on those technical points of a case that are beyond their realm of knowledge. The present system, bad as it is, is probably the best we can devise. The opprobrium cast on medical witnesses is probably well deserved. As a rule medical testimony is ineffective, due to the tendency of juries to become so confused between conflicting opinions that they must disregard it. The remedy is far to seek. If I should suggest one it would be a great deal more of professional honesty, and a greater capacity for the doctor to express his opinions intelligently and clearly, with due recognition of the fact that average jurymen are mentally juvenile, and that one must talk down to their level of comprehension.

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# MASSIVE COLLAPSE OF THE LUNG: WITH REPORT OF NECROPSY\*

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THE literature within recent years has been replete with articles on massive collapse of the lung, indicating its frequency. It is one of the interesting sidelights of medicine that a condition so definite in its entity should have remained unrecognized so many years and evaded the diagnostic acumen of many clinicians. Since attention was first called to its occurrence by W. Pasteur,<sup>1</sup> its frequency has become apparent and its clinical identification simple.

Instead of the usual term "postoperative massive collapse of the lung," I believe that a happier term in its description would be a revival of "atelectasis of the lung," as suggested by Jackson and Lee,<sup>2</sup> Scott,<sup>3</sup> etc., since we know that it is not strictly confined to postoperative situations, and has been identified in the course of pneumonic processes, not postoperative in their development, as indicated by Norris and Landis,<sup>4</sup> and Rigler.<sup>5</sup> It is entirely likely, also, that the collapse is not always massive, since clinical observations indicate that various gradations of collapse occur from a simple lobular type to one involving the whole of one or large portions of both lungs. The occurrence of a lobular collapse, indicating collapse of focal areas not large enough to include a major portion of a lobe, is now thought to exist by many students of the condition, and certain clinical observations and roentgenographic studies would support this view (Fig. 1). Unfortunately, this is not easily substantiated by autopsy findings because of the good prognosis in the anatomically more restricted case, although Jackson and Lee quoted Paul as having proved its presence at necropsy.

Many classical articles have appeared within recent years, usually with a review of the literature, that tend to a repetition of historical data, a practice which might well be discontinued in view of the prolixity of medical literature in general, and it is not my intention to repeat unnecessary detail.

It is astonishing how frequently collapse of the lung may be identified in practice when its existence is within the knowledge of the observer. Pasteur<sup>6</sup> pointed out in 1914 that it occurred in twelve instances in two hundred and one lung complications in Middlesex Hospital, a frequency more common than massive embolism, abscess or pleural effusion, but in his opinion not as frequent as pneumonia, bronchitis or dry pleurisy.

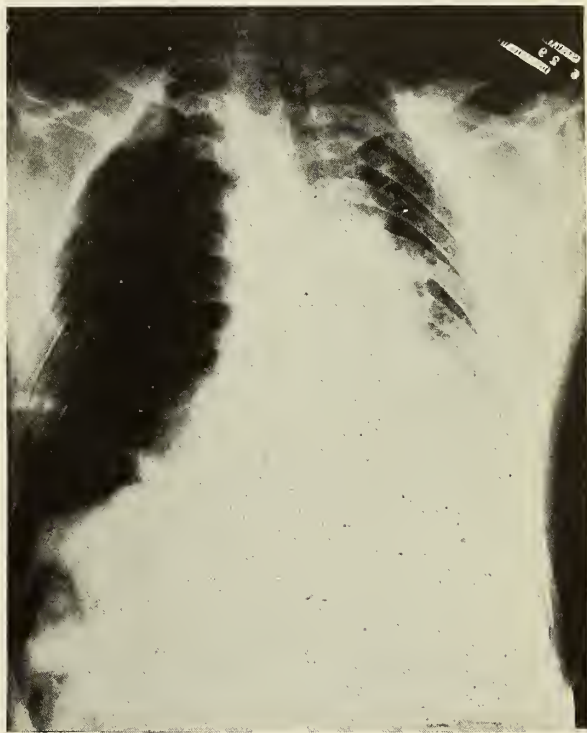


Fig. 1. Partial atelectasis of right lower lobe. Note extreme displacement of heart and trachea to right with atelectasis of right lower lobe of only partial degree; also compensatory emphysema of left side.

In view of recent studies (Cutler),<sup>7</sup> embolism is doubtless the most frequent postoperative pulmonary complication, and is probably the initial cause in the development of nearly all cases of postoperative pneumonia, and a factor in the development of so-called "dry pleurisy," which is probably no more than an infarction. If we eliminate embolism in its broad aspect, and bron-

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chitis, collapse of the lung is undoubtedly the most frequent complication developing in the lungs after surgical procedure. Dingley and Elliott<sup>8</sup> observed eleven cases in two years, and since the condition was first recognized by me<sup>9</sup> in November, 1920, I have observed fifteen cases in the surgical practice under the immediate care of the Duluth Clinic, or in personal consultation. It is difficult to estimate the incidence of the disease in surgical practice, because of failure in its recognition, and until the disease is more commonly recognized by all practitioners, available statistics will be more or less conjectural. There is no denial, however, of its relative frequency and its acceptance as a clinical entity, as a review of the literature would indicate.

A study of the various etiological factors tending to induce collapse of the lung indicates that one or both of two factors receive virtually all consideration. Some observers believe that the immobility of the diaphragm is a major factor, since Pasteur's original work in 1890, when he observed it as occurring in thirty-four cases of post-diphtheritic paralysis of the diaphragm and other accessory respiratory muscles. Its occurrence, particularly after operations resulting in relative immobilization of the diaphragm, *i.e.*, in operations on the abdomen or chest, or on the lower extremities necessitating the recumbent posture, shows that decreased respiratory activity, whether from its effect on the diaphragm or pulmonary excursion in general, is at least a partial factor. It is likewise true that obstruction of the bronchial tree, to which the collapsed area is tributary, is instrumental in its development, and probably the immediate precipitating cause. This is supported by Lichtheim's<sup>10</sup> observations made in 1878 and later, clinically, by the observation of many writers. The relief of the condition, oftentimes immediate and startling, by the evacuation, either spontaneously or bronchoscopically, of the obstructing mucus (Jackson and Lee, Vinson,<sup>11</sup> Sante,<sup>12</sup> etc.), is further proof of the relationship between obstruction of the bronchial tubes and the development of the disease. A case report, which follows in this paper, is to my mind illustrative of the relative proportionate significance of the two factors.

Various writers, notably Mastirs, Spittler and McNamers<sup>13</sup> have indicated that partial atelectasis is a common accompaniment in many patients who have operations performed on them,

necessitating the recumbent and supine position. Others have felt that vasomotor influences may be of importance, although this is difficult to prove and is doubted by other observers. The fact remains that the development of the condition is unquestionably favored by relative immobilization of the muscles of respiration following surgical attack on the abdominal organs and the attack immediately initiated as far as clinical evidences are concerned by the lodgment of mucus or other obstructing agents in the bronchial tubes proximal to the atelectatic area.

#### CLINICAL CAUSE AND SYMPTOMS

The clinical course and the symptoms of the disease have been so frequently described that a very brief enumeration is sufficient. The condition develops almost invariably within forty-eight hours after an operation necessitating bed rest—usually an attack on some abdominal viscus. The clinical onset is usually quite rapid, but premonitory symptoms, such as slight respiratory distress, a low degree of temperature elevation, etc., probably are present, though frequently confused with the usual postoperative reaction. The most frequent symptoms are pain in the chest, usually of moderate degree; cough, unproductive at first, later with the production of more or less viscid, tenacious, greenish-yellow sputum; dyspnea, at times extreme; and cyanosis. Many of these symptoms are no doubt due to the sudden and rapid mechanical anatomical alteration of the organs within the thorax, since the toxic factor seems to be comparatively less than in the acute inflammatory pulmonary complication.

The observation, postmortem, that the atelectatic area is of a dark bluish hue, sharply demarcated from the surrounding well aerated lung, would indicate that an unaerated shunt, as described by Lundsgaard and Van Slyke,<sup>14</sup> is a factor in inducing the cyanotic state. Although the cyanosis is frequently more pronounced at first, it usually persists in some degree until convalescence begins.

The respiratory rate is usually out of proportion to the increase in temperature curve or the increase in the pulse rate. The fever varies considerably; it may mount to 104, and it may be as low as 100 to 101 degrees. It is observed that the temperature, pulse and respiration elevation may be subject to diurnal variation.

Roentgenographic evidence and the physical examination are sufficient to identify the condition. The essential and characteristic feature is the displacement of the mediastinal structures and the elevation of the diaphragm toward the affected area. This is extreme, although it is conceivable that it varies in degree, depending

because of the presence of the liver on the right side (Figs. 2 and 3).

If one bears in mind the displacement of the mediastinum and its contents, and the elevation of the diaphragm toward the affected area, the physical signs are not difficult of interpretation. On inspection it is observed that the respiratory



Fig. 2. Atelectasis of both lower lobes of right lung. Note displacement of heart and trachea to right and confluence of collapsed lung, heart and liver areas, with absence of demarcation.

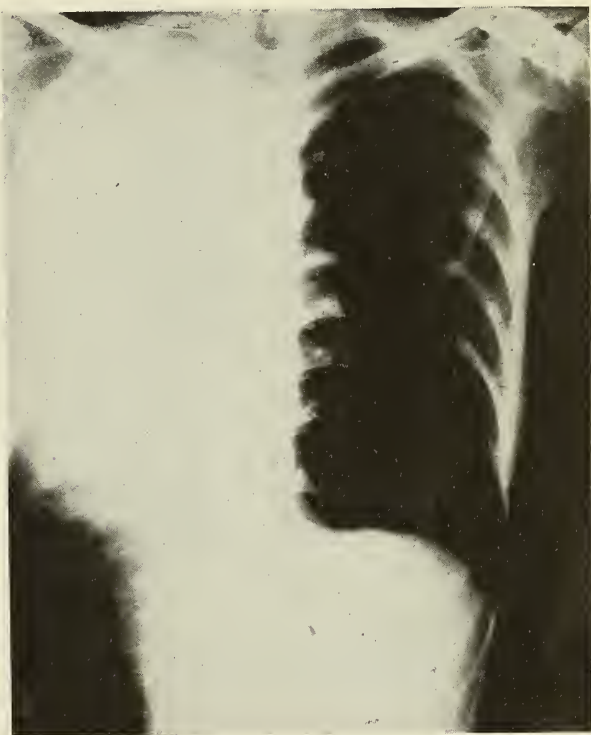


Fig. 3. Collapse of larger part of left lung. Note compensatory emphysema on right with depression of diaphragm. The left portion of the diaphragm is high, the trachea only moderately deflected to the left and the right border of the heart not discerned to right of sternum. Roentgenogram taken first day of atelectasis.

upon the amount of atelectasis present. I have seen *x*-ray pictures in which the displacement of the heart is relatively slight and the elevation of the diaphragm minimal, yet characteristic in its variation from the normal. In the more marked cases the diaphragmatic elevation is extreme, and the displacement of the mediastinal structure is almost grotesque—if one may use the term (Figs. 2 and 3). It has been noted by some observers that the deviation of the trachea and the upper mediastinal structures is not as conspicuous in the left sided cases as it is in those occurring on the right. This is probably due to the course of the left bronchus under the arch of the aorta, militating somewhat against free excursion toward the left. There is also a tendency for the elevation of the diaphragm to be slightly more marked on the left than on the right, possibly

movements on the affected side are greatly diminished and the ribs in closer approximation. This is to be anticipated from the reduction in the area of pulmonary activity. On percussion, the involved pulmonary area and the displaced heart yield a dull and unusually flat note, because of the absence of air in the underlying structures. On the right side, this area of dullness or flatness extends to the base, and is confluent with the liver dullness. On the left side, however, the elevation of the diaphragm and the encroachment of the air-containing stomach reveals an area of tympany at the lower rib margin, which has been confused by the unwary as an indication of a pneumothorax. As is to be expected, the unaffected side and oftentimes the upper lobe on the affected side are hyperresonant, because of

the compensatory hyperactivity. On auscultation, breath sounds are increased in all the uninvolved areas, but at the site affected there is at times a diminution and at times an extreme increase in the transmission of the breath sounds, depending, no doubt, upon the degree and the site of occlusion in the bronchus obstructed. In my ex-

tent to which the atelectatic area becomes consolidated so that it is not demarcated roentgenologically from the adjacent cardiac and hepatic structures. They also illustrate the reason for the difference in the physical signs on the right and left side, because of the subjacent liver and stomach respectively. The more marked devia-

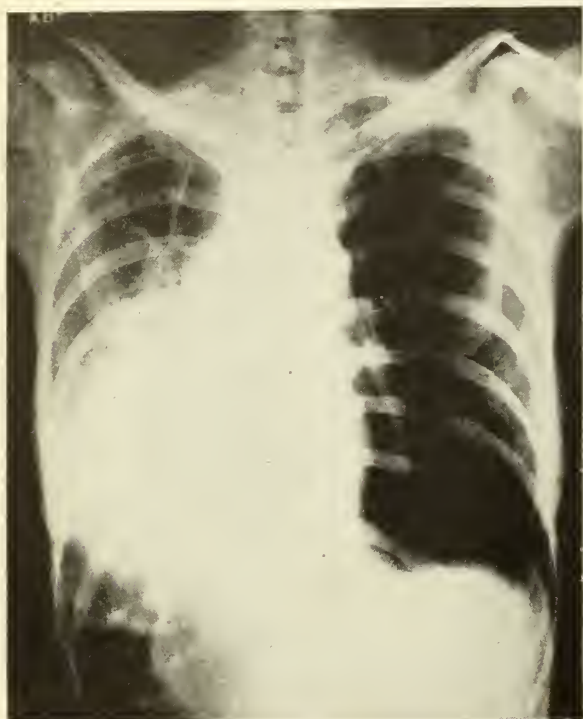


Fig. 4. Same case as Figure 3, with collapse considerably lessened in degree. The diaphragm is still markedly elevated on the left, but the heart outline is noted just to the right of the midline. This roentgenogram was taken after employing Sante's maneuver on June 10, 1927.

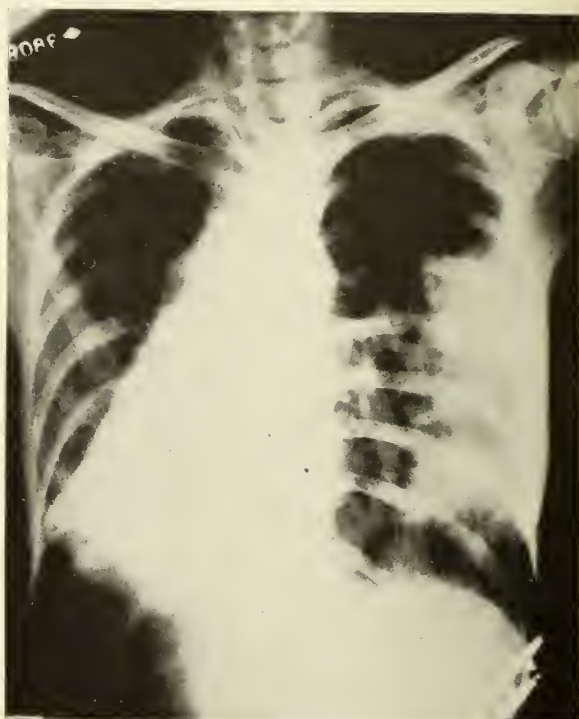


Fig. 5. Roentgenogram taken on June 12, 1927, after collapse was much improved but bronchopneumonia had developed on the opposite side. Note the lack of influence of the pneumonia on the position of the diaphragm on the right and on the position of the heart—a distinguishing evidence between pneumonia and atelectasis.

perience, the breath sounds are, as a rule, extremely harsh, and distinctly bronchial, or even tracheal in intensity. Many observers, however, mention diminution in the breath sounds in the early stages of the condition. It is observed that the apex beat invariably is drawn very materially towards the affected side; in the right sided cases, to the right of the sternum, or at the xiphoid cartilage—so much so that sometimes it has been misdiagnosed as a dextrocardia. In the left sided cases it is displaced frequently to the anterior margin of the axilla or even into the axillary space.

During convalescence the physical signs improve, and the heart and diaphragm slowly assume the normal position, with the gradual expansion of the non-functioning lung.

The appended illustrations show well the ex-

tion of the trachea in the right sided cases is also manifest.

#### TREATMENT

Because of the good prognosis, expectant treatment is usually all that is necessary, particularly in the cases which are limited in their involvement to one lobe or less. Absolute rest, deep breathing exercises and symptomatic treatment are usually all that is necessary.

In many cases the onset is accompanied by severe respiratory distress, with cyanosis, and indications of heart failure. In a case of this kind, on one occasion, I have felt that a venesection of 500 c.c. of blood was a life saving measure.

At times a rapid convalescence follows the expectoration of a large amount of thick,

mucopurulent sputum. This occasionally occurs spontaneously, with the sudden evacuation of four to eight ounces of a thick, viscid, tenacious sputum, usually followed by prompt relief to the patient, and an improvement in the constitutional and physical signs as well. Bronchoscopic aspiration suggested and carried out by Jackson and Lee, Harrington and others, is of undoubted value in inducing clinical improvement.

Sante<sup>12</sup> has recently suggested turning the patient on the unaffected side and inducing voluntary coughing. In Sante's case this was promptly followed by the expectoration of copious amounts of sputum, with great relief to the patient, and rapid clinical improvement. In the only patient on whom I tried this maneuver, there was slight response, but since this was with the patient who is the basis of the attached protocol, it can readily be seen that a marked response could hardly be expected. It is too early to draw any conclusions as to the value of Sante's maneuver. It has been well known, and pointed out by Jackson and Lee,<sup>1</sup> and also by Vincent,<sup>11</sup> that aspiration of the obstructing obstacle, be it a foreign body or mucus, causes prompt relief and clinical improvement. Farris<sup>15</sup> has suggested performing an artificial pneumothorax on the affected side, on the assumption that the replacement of the dislocated heart and mediastinum is of extreme value in inducing a clinical improvement, in restoring these vital organs to their normal situation and establishing a mechanical balance. It is his belief that the distress is chiefly due to the mechanical displacement of the mediastinal structures rather than to any other factor. In certain selected cases this procedure might be of value, but the treatment seems radical except as an extreme measure.

The appended case report I consider valuable from the fact that an autopsy was obtained, disclosing some features which may have a relationship to the etiology of the condition.

#### CASE REPORT

*Mrs. C. S.*, white, aged 44, a housewife.

The family and marital history is essentially negative to the present complaint. The patient had married twice, having had one child by the first marriage. There is no history of any miscarriages.

*Past History.*—The patient has had stomach trouble for four years, but has always been well otherwise, until January, 1927, when she had an acute respiratory infection. Since that time she has had a tendency to

gas and bloating, not particularly relative to meals, but occurring periodically and lasting for several hours, accompanied by pain in the epigastrium. The patient also has had a feeling of malaise, weakness, palpitation of the heart, and attacks of paroxysmal coughing.

*Physical Examination* (Interne's Notes).—The pupils are equal, and react to light and accommodation. The teeth are in good condition. There is no evidence of any infection in the nose or throat. No glands are palpable in the neck. The thyroid is of normal size.

The examination of the chest shows the lungs to be entirely normal. The heart action is regular, the apex is just within the nipple line, the heart tones of normal intensity, and no murmurs are audible.

Abdominal examination shows a tendency to laxity of the abdominal wall, suggesting the viscerotonic type. No abdominal tenderness is manifest, and no tumor mass can be felt.

*Laboratory Report.*—The x-ray examination of the chest is entirely negative.

The sputum examination is negative, the urine normal chemically and microscopically. The blood count shows 5,000,000 red blood cells, hemoglobin 90 per cent; blood Wassermann ++++.

A Graham-Cole test was done for gallbladder diagnosis, and was found to be positive.

*Course.*—The patient was admitted to St. Mary's Hospital under the care of Dr. L. A. Barney, on June 1, 1927, having had an attack of vomiting and complaining of some pain in the epigastrium, with a reference of the pain into the left chest.

June 6, 1927, a laparotomy was performed by Dr. L. A. Barney, under gas-ether anesthesia. The gallbladder was found to be adherent to the duodenum, and some yellow patches could be seen through the serosa of the gallbladder. The gallbladder and appendix were removed, and the wound closed with drainage.

The pathological report showed an appendix measuring 5 cm. in length and .5 cm. in diameter. The lumen contained some hard fecal material, and the wall was thick and fibrous. The gallbladder measured 4 cm. in length, 2.2 cm. in diameter. The lumen contained a cholesterol stone measuring .3 cm. in length. The mucosa was congested and edematous, and the wall thickened.

A surgical diagnosis was made of cholecystitis and cholelithiasis and chronic appendicitis.

June 7 the patient complained of restlessness, shortness of breath, and she expectorated some mucus. Some bile was also vomited. At short intervals the patient complained of considerable mucus in the throat, and a tendency to choking. An examination was made, and it was observed that the patient had an extreme flatness on the left side of the chest, extending anteriorly upward to the third rib, and posteriorly to the second rib, with an area of hyperresonance above this point. The right side was hyperresonant. The apex of the heart was most markedly audible in the anterior axillary line on the left side. On percussion, tympany was noted from the seventh rib downward. A few fine râles were audible in the left chest posteriorly, but

the breath sounds in the dull area were materially increased and were tracheo-bronchial in character.

An *x*-ray showed the characteristics portrayed in Fig. 3.

A diagnosis of postoperative atelectasis of the lung on the left side was made.

On June 9 the patient coughed up a small quantity of mucus after attempting Sante's maneuver, and showed some improvement, the temperature receding



Fig. 6. Section of atelectatic area. See report of pathologist for detail.

to normal, but rising again toward evening, and continuing at about 100 degrees until June 12.

An *x*-ray on June 10 showed some improvement in the area of dullness on the left side, corresponding to some improvement in the physical signs.

The patient's clinical condition, however, did not improve, the vomiting continued, and the pulmonary signs became acute. There was considerable coughing, expectoration of mucus, and respiratory distress.

Another *x*-ray picture was taken on June 12, and it was observed that the patient had pneumonia on the contralateral, right side.

The patient gradually became worse, and died June 14, 1927.

The autopsy disclosed the following, as reported by Dr. George S. Berdez, pathologist:

*Mrs. C. S.:* Died at St. Mary's Hospital June 14, 1927, 4:45 p. m.; autopsy at St. Mary's Hospital June 14, 1927, 7:30 p. m.

This is the body of a female, measuring about 170 cm. in length, showing emaciation Grade III.

On the left side of the midline there is a recent operative wound measuring about 18 cm. in length; dry. Upon opening the thoracic cavity the right lung shows a few fibrous adhesions to the thoracic wall, and the cavity contains a small amount of bloody serous fluid. The left pleural cavity contains about 200 c.c. of serous fluid. The lower left lobe is completely col-

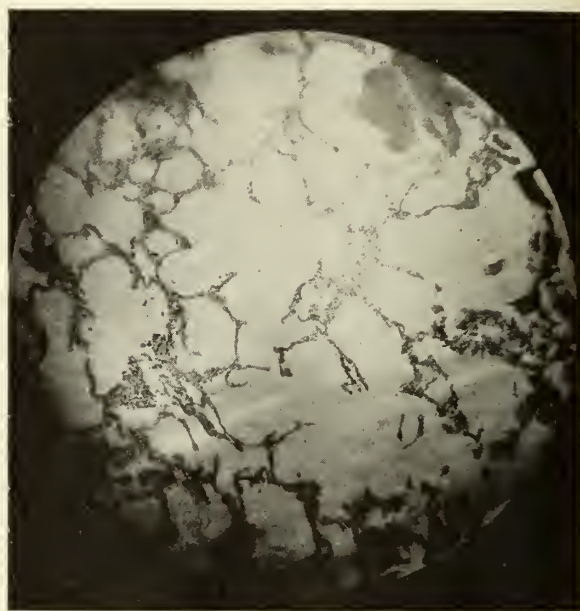


Fig. 7. Section of area of compensatory emphysema in unaffected upper left lobe of lung.

lapsed. The upper lobe is very emphysematous. The heart is displaced very much to the left. The pericardial cavity contains about 20 c.c. of serous clear fluid. The mitral and tricuspidal valves are patent for two fingers. The arterial openings are competent. The myocardium is moderately transparent and brownish. The coronary vessels show only a few small yellowish patches. The aorta shows several irregular whitish patches and in places irregular depressions. The concavity of the arch of the aorta shows an aneurysmal sac about the size of a prune, measuring about 4.5 to 5 cm. in diameter. The sac is filled with compact and adherent thrombotic masses. The aneurysm is quite adherent to the left pneumogastric nerve and mainly with the recurrent laryngeal, which can be dissected out only with the greatest difficulty. The aneurysm, which extends from the posterior part of the concavity of the arch on its descending portion, causes compression of the lower left bronchus and of the left pulmonary artery. The sac is quite adherent to the esophagus and to the left bronchus, which shows a small perforation at a place where the wall is very much thinned. This part of the aneurysmal sac is tightly obliterated by the adherent thrombotic masses. The lower lobe of the left lung contains no air and is completely atelectatic. The bronchi to this lobe

are almost obliterated by much tough purulent mucous material. The upper left lobe shows marked emphysema. The right lung is very much larger than usual, shows a marked edema which in places indicates pneumonic changes. The anterior parts of the right lung are emphysematous. The hilus glands on both sides, mainly on the right side, are very much enlarged.

The spleen is about twice normal size and fibrous. The adrenals are rather small, and contain a moderate amount of lipoid. The right kidney shows a small recent infarct. The left kidney shows two scars of older infarcts. The bladder contains a little cloudy urine. The tubes and ovaries show nothing of note. The uterus contains little blood. The mucosa shows a few mucous cysts. The gallbladder is absent. There are a few recent adhesions around the bed of the gallbladder. The remainder of the peritoneal serosa is smooth and glistening. The common duct is slightly dilated and contains somewhat cloudy bile. The liver is about normal in size, the markings are distinct, the tissue is pale and cloudy. The pancreas shows nothing of note. The stomach contains much gas and some bile-stained mucous material. Some similar material is found in the duodenum and in the small intestine. The appendix is absent and a ligature is found on its stump. A small amount of yellowish exudate is seen around this stump, enclosed in local adhesions. The ligature of the stump is tight. The large intestine contains a little soft fecal material. The mesenteric glands show nothing of note. Lymph glands can be palpated in the occipital and epitrochlear regions. The thyroid is rather small. The vocal cords show a normal symmetric cadaveric position.

#### *Anatomical Diagnosis:*

Status after cholecystectomy, appendectomy.  
 Luetic aortitis.  
 Aneurysm of the aorta.  
 Compression of the hilus of the left lung.  
 Collapse (atelectasis) of the left lower lobe.  
 Bronchopneumonia of the right lung.  
 Chronic tumor of the spleen.  
 Old and recent infarcts of the kidneys.  
 Multiple lymphadenitis.

#### *Microscopic Examination:*

##### Section No. 1—Lower Lobe of the Left Lung—

The alveoli are almost completely collapsed. The lumen of several alveoli contain desquamated epithelial cells, and the capillaries are in part distended and filled with blood. The bronchi are mostly filled with mucus and pus. Here and there, there are moderate deposits of cell pigment in the connective tissue surrounding the bronchi. The intima of the branches of the pulmonary artery often show irregular thickenings.

##### Section No. 2—Upper Left Lobe—

The alveoli are very much distended, filled with air. The alveolar septa are thinned, sometimes ruptured. At various places small groups of alveoli are filled with fibrin and p.m.n.'s. Some of the smaller bronchi contain also a small amount of a muco-purulent exudate.

#### COMMENT

This case report is of interest because of the oc-

currence of a bronchial obstruction on the left side from compression through an aneurysm in the arch of the aorta, which undoubtedly antedated the operation. Interestingly, the operation induced an attack of massive atelectasis of the lung within forty-eight hours following the operation. To my mind this would indicate that there is a close relationship in the causation



Fig. 8. Photograph of aorta and aneurysm, divided by section, in concavity of aortic arch.

of atelectasis of the lung postoperatively between the influence of bronchial obstruction and respiratory immobilization. It has been contended by some that bronchial obstruction is secondary to the respiratory immobilization, and by others that it is quite independent of it, in inducing collapse, but I believe the sequence

of events in the case reported quite clearly shows the influence of both factors.

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#### SOLVO ASPIRIN NOT ACCEPTABLE FOR N. N. R.

Solvo Aspirin (Ess & Arch Co., Philadelphia) bears the declaration on the label that "Each teaspoonful contains 5 grains of aspirin in a soluble and convenient form with other suitable ingredients." In the information sent the Council on Pharmacy and Chemistry the following statement of composition was offered: "Solvo Aspirin is a solution containing five grains of ASPIRIN (Acetylsalicylic Acid) to each fluid dram, in a soluble form free from all precipitates, combined with Glycerine, Elixir Aromatic, Distilled Water and Tincture Cudbear." In another communication, the preparation was declared to contain, in addition, two grains of sodium bicarbonate to each teaspoonful. The Council reports that from the information it is evident that the preparation is one in which the attempt is made to make acetylsalicylic acid more soluble by addition of sodium bicarbonate, and this despite the fact that it is well known that, in the presence of water, acetylsalicylic acid reacts with sodium bicarbonate to form sodium acetylsalicylate, which in turn is hydrolyzed to sodium acetate and sodium salicylate. In consonance with this, the A. M. A. Chemical Laboratory reported that, in a specimen submitted to examination, the acetylsalicylic acid was largely, if not completely, decomposed into sodium salicylate and sodium acetate. The Council declared Solvo Aspirin unacceptable for New and Non-official Remedies because it is an unscientific mixture, marketed under a misleading name, with an incorrect statement of composition and with unwarranted claims. (*Jour. A. M. A.*, January 21, 1928, p. 205.)

#### SOME EFFECTS OF SYNTHALIN

Investigation by Blatherwick and his colleagues at the Santa Barbara Cottage Hospital in California demonstrated that synthalin administered by stomach tube failed to produce hypoglycemia in rabbits. Subcutaneous and intravenous injections usually decreased the blood sugar. Acute nephritis is produced by parenteral administration. There is also injury of the liver, as shown by a decreased ability to deaminize subcutaneously injected glycerine. Certainly caution should be exercised in the use of a drug showing such properties. Blatherwick points out that the hypoglycemia produced by synthalin may be due to a combination of at least two processes. One of these resembles the action of insulin and the other that of hydrazine. The latter substance appears to cause hypoglycemia by injuring the liver and thus preventing normal glyconeogenesis. Synthalin has apparently not yet met the prerequisites for rational use in the relief of diabetes. (*Jour. A. M. A.*, January 21, 1928, p. 209.)

#### DIPHThERIA TOXOID (ANATOXINE-RAMON)

This product, as prepared at the serum division of the Pasteur Institute by Dr. Ramon himself, has been successfully employed in immunization against diphtheria in France and other countries. No information is at hand as to the efficacy and safety of commercial preparations of diphtheria toxoid made in this country. The Council on Pharmacy and Chemistry of the American Medical Association has not accepted any of these preparations for inclusion in New and Non-official Remedies. (*Jour. A. M. A.*, January 14, 1928, p. 139.)

## CLINICAL CONSIDERATION OF CARDIAC PAIN\*

W. H. LONG, M.D.  
*Fargo, N. D.*

THERE is hardly a more important task for the physician than the interpretation of precordial pain. The seriousness of overlooking those atypical types of angina pectoris associated with coronary sclerosis and the failure to warn these individuals concerning proper regime is evident. But the consideration of mistaking functional types of distress and neuromuscular chest pain for true angina and thereby possibly engendering a great mental handicap is often overlooked. Of the two types of invalid, the latter with his cardiac neurosis often becomes the more pitiful.

The symptoms of the syndrome known as angina pectoris are so well known that any repetition of them seems useless, yet the description by Heberden is so masterful that it can hardly be omitted. He wrote,

"But there is a disorder of the breast marked with strong and peculiar symptoms, considerable for the kind and danger belonging to it, and not extremely rare, which deserves to be mentioned here at length. The seat of it, and sense of strangling and anxiety with which it is attended may make it not improperly be called Angina Pectoris.

"They who are afflicted with it are seized while walking (more especially if it be uphill, and soon after eating) with a painful and most disagreeable sensation in the breast, which seems as if it would extinguish life if it were to increase or continue; but the moment they stand still all this uneasiness vanishes.

"In all other respects the patients are, at the beginning of the disorder, perfectly well, and in particular have no shortness of breath, from which it is totally different. The pain is sometimes situated in the upper part, sometimes in the middle, sometimes at the bottom of the os sterni, and more often inclined to the left than to the right side. It likewise very frequently extends from the breast to the middle of the arm. The pulse is, at least sometimes, not disturbed by this pain, as I have had opportunity of observing by feeling the pulse during the paroxysm. Males are most liable to this disease, especially such as have passed their fiftieth year. After it has continued for a year or more it will not cease as instantaneously upon standing still, and it will come on not only when the persons are walking, but when they are lying down, especially if they lie on the left side, and oblige them to rise out of their beds. In some inveterate cases, it

has been brought on by motion of a horse or a carriage and even by swallowing, coughing, going to stool, speaking or any disturbance of mind."

This classical description, written in 1768, has never been improved upon.

The association of angina pectoris with various pathological pictures has given rise to many interesting controversies. Heberden felt that it was due to a spasmodic condition. Jenner, soon after Heberden's description of the syndrome, associated it with coronary sclerosis. However, cases were soon studied which failed to show at autopsy any demonstrable pathology. It was believed that in these cases spasm of the coronary vessels similar to the attacks of intermittent claudication in the extremities was the cause of the attacks. Albutt was first to attribute practically all cases to aortitis, and felt that the stretching of the outer coats of the aorta in its first portion gave rise to the pain. Mackenzie's explanation, however, seems best applicable to the majority of cases, that is, that the pain is due to an exhaustion of the heart muscle. This explanation nicely accounts for the pain suffered by the young healthy individual, which comes only with extreme physical exertion; and accounts quite as well for the pain of the individual with disease, whether this be impaired circulation from sclerosis diffuse in the aorta, or at the origin of the coronary vessels, or along the course of the coronary vessels, or fibrous change in the myocardium as the result of actual inflammatory disease.

That coronary disease may be held a very common associated pathological finding is well illustrated by Cabot's studies:

In an analysis of 127 cases of coronary sclerosis there were ninety-four without angina and thirty-three with angina. Of eleven cases with angina and without coronary sclerosis four showed sclerosis of the aorta, one syphilitic aortitis and six showed no changes whatever in the aorta.

In an electrocardiographic study of one hundred and fifty-five cases, Willius felt that coronary disease was the most likely factor in 86.5

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per cent. Lambert's observation that 80 per cent of cases of coronary sclerosis presented attacks of pain and dyspnea is likewise striking. Another important report is that by Willius and Brown of a post-mortem study of eighty-six cases of coronary sclerosis; of these, 26 per cent presented typical symptoms of angina pectoris; in 40 per cent the symptoms were so slight that cardiac disease was not suspected; the degree of sclerosis was much more marked in the former group.

The diagnosis of the typical and more severe cases is always easy. But too often one sees cases with variation from the usual picture, which, for lack of careful consideration of the details of clinical history, go undiagnosed. And let me emphasize that it is upon these details of history and not upon physical signs that the decision is usually based.

Of these atypical cases, a common type is that with pain of typical location but associated only with overeating. These attacks may continue for some time before pain with other types of cardiac overload becomes evident. By careful questioning one can often determine the fact that while they occur after eating they are more prone to occur if the patient is active soon after eating, or that the pain may occasionally be referred to the base of the neck or to the shoulder or to the arm.

Another type often overlooked is that with pain only in the epigastrium; the patients present themselves thinking they have some gastric disorder. Again the history that such distress occurs regularly with exertion and the incidence of perhaps occasional mild attack with substernal or precordial location with characteristic radiation will serve to distinguish them. The fact that these attacks occur only on cold days or are much worse on cold days may be helpful.

Occasionally pain may begin in the hand, in the inner two fingers and ascend the arm, localizing in the breast. Occasionally it may be entirely confined to the arm. I saw one case in which the only pain was localized over the distribution of the great occipital nerve, masquerading for months as neuralgia, but careful history established its absolute association with exertion and therapeutic trial with nitrites abolished it completely. Another type sometimes met with is known as "angina sine dolore"; here the pa-

tient has only a marked thoracic oppression with immobility of respiration and anxious facies.

The localization of cardiac pain is along the distribution of the spinal segments corresponding to the origin of the primitive cardiac tube. Since these segments are distributed over a rather wide area extending from the first cervical segment to the eighth dorsal segment, this accounts for the varied location of the referred pain.

Kahn has called attention to a group of symptoms which he designates as prodromal. The more important of these are attacks of sudden weakness associated at times with palpitation, at other times with the feeling that something had dropped in the chest. Other cases presented for a considerable time a burning sensation, substernal or epigastric. Others presented cardiac asthma and dyspnea. These cases were followed for a considerable period and all later developed typical angina pectoris.

Lambert, in a study of cardiac pain last year, described the characteristics of that occurring in coronary endocarditis separately from that seen in Heberden's angina. While this attempt to separate varieties of cardiac pain may be far-fetched, his observations are interesting. He says, "The pain is characteristically a sense of fullness and pressure, or an uncomfortable oppression or constricting belt rather than an acute, sharp pain. The pain is usually substernal or precordial. . . . In a few instances the pain remains localized in the shoulder and arm. More than twice as frequent as arm pain is epigastric pain." He describes attacks of respiratory distress which often occur at night in patients who show but little dyspnea on exertion. He stresses the fact that the pain in coronary sclerosis is likely to be accompanied by dyspnea while that in Heberden's angina is not, but rather is attended by an immobility of the chest. By this differentiation he evidently attributes most of the major attacks (Heberden angina) to aortitis.

Other types of precordial pain to be differentiated are those associated with chronic endocardial disease, especially aortic regurgitation and mitral stenosis; pericarditis; intercostal neuritis; root pains; herpes zoster; cardiac neurones, such as effort syndrome; and, finally, acute coronary occlusion.

The pain of mitral stenosis is more likely to be

of the sticking, lancinating type. It is less clearly dependent upon cardiac overload. The pain of aortic regurgitation is more constant like that of aortic aneurysm. The pain of pericarditis is usually localized to the precordial region, and may be localized to a very small area; it is likely to be sticking in type and is more constant than the pain of angina pectoris. All these conditions are likely to be present in younger individuals and their physical signs serve to distinguish them.

Intercostal neuralgia is rare, the pain is paroxysmal and there is tenderness along the nerve trunk. Myalgia of the chest wall is more common. The pain of this condition is likely to take on the characteristics of neuro-muscular pain elsewhere; it is often worse in damp changeable weather; it is frequently localized to a small area; there are often areas of localized tenderness over a muscle attachment or over a rib; it may vary in location from day to day; movements of the chest wall or shoulder girdle are likely to aggravate it; it is likely to be lancinating in type; it is usually associated with definite foci of infection. Kilgore made a rather comprehensive study of 253 patients with chest pain and found that of the thirty-six cases which he considered true angina, pain of lancinating type was found in only four, and of these four, there was only one who did not have pain of dull compression type also, which he considers much more characteristic of true angina.

The pain in cardiac neuroses may more exactly simulate true angina, but the history will reveal many discrepancies, such as the greater incidence of attacks while at rest or the failure of relief of pain by rest. These discrepancies, together with the symptoms and signs of vasomotor and nervous instability, should serve to distinguish them from angina pectoris.

The condition most likely to be confused with the more severe attacks of angina pectoris is acute coronary occlusion. The chief characteristics of this condition are these:

The pain is much more severe than that of angina; it is terrific, often requiring repeated full doses of morphine for relief; nitrites are of no avail. The pain is much more protracted, lasting for hours. The patient is severely shocked, the face ashen or very pale, and covered with cold perspiration. The pulse is small,

thready, and rapid. The heart tones are feeble, distant, and of the ill defined fetal type. Dyspnea is universal, and the lungs soon show signs of passive congestion with coarse râles over the bases in the majority of cases. There is a decided fall in blood pressure in practically all cases. Vomiting is frequent and often this and the frequent location of the pains in the epigastrium may cause it to be confused with intra-abdominal disease. Fever soon develops and may reach 101 or 102 degrees. A leukocytosis is the rule and may reach as high as 20,000. A pericardial friction rub frequently develops as early as twenty-four to forty-eight hours after the onset.

The comparative frequency of coronary occlusion and angina pectoris is shown in the report of Paul D. White, who observed sixty-two cases of coronary occlusion and two hundred cases of angina pectoris over a period of five years. In the past one and a half years our records show six cases of acute coronary occlusion and thirty-seven cases of angina pectoris.

Following is a brief tabulation of thirty-seven cases of angina pectoris seen from April, 1926, to August, 1927.

Males 30. Females 7.

Age at onset by decades:

4th—4 cases

5th—10 “

6th—15 “

7th—8 “

Arteriosclerosis, general: Slight—1 case

Grade 1—12 cases

Grade 2—13 “

Grade 3—4 “

Grade 4—4 “

Hypertension: Present in 19; absent in 15.

Cardiac enlargement:

Grade 1—12 cases

Grade 2—8 “

Grade 3—5 “

Grade 4—1 case

Nonapparent—9 cases

Heart tones: good in 10 cases; fair in 12 cases; poor in 13 cases.

Congestive failure: present, 10 cases; absent in 27 cases.

Severity of pain: mild in 16; moderate in 11; severe in 10.

Electrocardiographic tracings showed sufficient abnormality to diagnose myocardial disease in 22 cases. Not sufficient change to diagnose myocardial disease in 13 cases. Not done, 2 cases.

Death has occurred in 7 cases: sudden cardiac deaths 4; from congestive heart failure 1.

Two cases showed at autopsy extensive arteriosclerosis involving coronaries and also aorta.

Theobromine results: 7 good; 5 fair; 5 poor.

During the same period six cases of acute coronary occlusion were encountered and the findings are briefly tabulated.

Average age, sixty.

All males.

Previous angina, present in all; severe in 2; mild in 4.

Leukocytosis varied from 14,400 to 23,000.

Pulmonary congestion in all.

Electrocardiographic finding in 4 showed changes accepted as indicative of that condition.

Death occurred within 3 hours in 2; on sixth day in 1; on ninth day in 1; in sixth week in 1 (sudden death after patient had been about).

Autopsy performed in 2 cases revealed recent complete occlusion of a large branch of the left coronary.

In differentiating the condition from intra-abdominal disease the details of history are most important. It often requires persistent questioning at the height of the attack to get the patient to admit that there is radiation of the pain to neck or shoulder or arm. This radiation is not invariable but should be sought for. The history of previous lesser distress of anginal type is of extreme importance; the frequency with which this history could be obtained varied greatly in various reports, Lambert obtaining it in only 25 per cent of three hundred and twenty-five fatal cases, while White reports its presence in thirty-two of sixty-two cases.

The prognosis of angina pectoris is always difficult and must depend upon the closest appraisal of all available data. This data should comprise: the nervous stability of the patient; the age of the patient; the severity of the pain; the amount of effort required to induce the pain; the presence or absence of generalized arteriosclerosis; the blood pressure; the size of the heart; the character of the heart tones; the presence of signs of concomitant heart failure; and the results of electrocardiographic study. The cases with few signs of cardiac damage and little elevation of blood pressure offer a better outlook. Also, those persons who have a low threshold for pain and are obviously of a high-strung, nervous type, can be given a better prognosis. In any case, sudden death is possible.

The average duration of life after the onset of symptoms in White's series was 4.2 years. In Mackenzie's series of 213 cases, the average duration of life was 5.4 years after the onset of

symptoms; of these, 23 lived less than one year, 97 from one to five years, 58 from five to ten years, 24 from ten to fifteen years, and 11 more than fifteen years. Willius' cases showed a 47 per cent mortality during a five year period. In another series of cases studied by Willius sudden death occurred in 83 per cent.

The treatment of angina pectoris is largely the regulation of the life of the individual within the limits of his myocardial tolerance. He must avoid all strain, physical and mental, which brings on his attacks. A period of bed rest will often give enough improvement of the myocardium to permit previously badly handicapped patients to lead fairly active and useful lives for long periods. The diet must be restricted, over-eating avoided, and protein foods taken in moderation. Extra hours of sleep and frequent short vacations are important to lessen nervous irritability.

Focal infections should be eradicated, especially in the cases with but little evident myocardial damage. This procedure often results in a surprising degree of amelioration, and besides, it is of prime importance in the prevention of further myocardial damage.

The continued use of theobromine in five grain doses, or of euphallin, has been effectual in lessening the incidence and severity of the attacks in a number of cases. In cases with syphilis, anti-luetic treatment should be carefully carried out.

The treatment of the attacks should be first by nitrites, one hundredth of a grain of nitroglycerine, dissolved under the tongue and repeated every one-half to one hour as necessary, or by amyl nitrite by inhalation. These failing, morphine is indicated.

In conclusion I would emphasize that the diagnosis of angina pectoris must depend on the details of clinical history, the physical findings being often entirely negative. The prognosis depends upon a complete appraisal of the cardiovascular mechanism, and in a large degree upon the coöperation of the patient. The treatment is largely the institution of a proper individual régime.

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### THE DANGERS OF ULTRA-VIOLET RAYS

Not only do barber shops swindle prospective victims of baldness with incandescent lamps colored purple, not only do electrical corporations sell, as ultra-violet ray devices, contraptions delivering hardly any ultra-violet radiation at all, but some manufacturers of apparatus actually delivering ultra-violet rays of potency endeavor to place these devices wherever a sale can possibly be made. Regardless of the fact that practically every method in medicine that may do good can also do harm, these machines are being sold to bath institutes, swimming pools, massage parlors, beauty parlors, clubs, barber shops and innumerable other businesses in which medical supervision is certainly not probable, indeed, hardly possible. The sales are made notwithstanding the fact that scientific literature has already revealed that the rays may in some instances be potent for harm. (*Jour. A. M.*, January 14, 1928, p. 120.)

### NOBRO

This is another phenobarbital (luminal) mixture sold as a cure for epilepsy. It is put out by the Nobro Medic Co., Worthington, Ohio, and sold on the mail-order plan. The individual behind this concern seems to be one Harry M. Freck, whose claim to medical knowledge appears to be based on the fact that he once operated the Freck Garment Company, and at present conducts the Freck Stenographic Bureau and an advertising circular-letter business. He has been connected with other "patent" medicines. Nobro comes in the form of pink capsules. The "course" consists of ninety capsules sold for four dollars. The A. M. A. Chemical Laboratory analyzed Nobro and reports that each capsule contains essentially 0.0414 Gm. (approximately 3/5 grain) of phenobarbital to which has been added lactose. (*Jour. A. M. A.*, January 7, 1929, p. 49.)

### TOPHIRIN TABLETS NOT ACCEPTABLE FOR N. N. R.

The Council on Pharmacy and Chemistry reports that "Tophirin Tablets" (Bram Chemical Co., Philadelphia) is stated to contain in each tablet: "Acid Phenyl Cinchoninic (cinchophen) Gr. 3½; Magnesium Salicylate Gr. 3½; Colchicine, Alkaloid Gr. 1/400," but that no quantitative statement appears on the package or in the advertising. In the administration of cinchophen, the salicylates, and colchicum it is essential that these drugs be given in amounts suited to the individual case and patient. There is no evidence showing that the combined use of these drugs is of advantage. It is thoroughly irrational to administer cinchophen, magnesium salicylate and colchicine in fixed proportion. The Council found "Tophirin Tablets" unacceptable for New and Non-official Remedies because it is an irrational mixture offered to the profession without declaration of its quantitative composition and under a name which does not declare the potent ingredients but is therapeutically suggestive, and because it is sold with unwarranted claims and in a way which will lead to its ill-advised use by the public. (*Jour. A. M. A.*, January 28, 1928, p. 293.)

### GOLDEN GLINT

If we are to believe the advertising material that comes with the trade package, Golden Glint (J. W. Kobi Co., Seattle, Washington) "is a specialist's preparation for harmlessly beautifying the hair." There is also a "Golden Glint Shampoo." From an examination made in the A. M. A. Chemical Laboratory it appears that Golden Glint is essentially a mixture of aniline dyes, such as methyl violet (used in indelible pencils) and Bismarck brown, with excipients. (*Jour. A. M. A.*, December 10, 1927, p. 2059.)

## THE PAINFUL SHOULDER\*

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THE pathological causes which produce pain in the shoulder are varied and can be ascribed to injury, infection, nerve involvement and new growths. The resulting conditions are also extremely numerous and present the symptoms more or less characteristic of the lesion in question.

The conditions which produce painful shoulder are:

### A. Trauma

1. To the acromio clavicular joint.....

{	dislocation.
	fracture.
	arthritic changes.
2. Fracture of the scapula.
3. Dislocation of the shoulder.
4. Fracture of the humerus—head, neck and tuberosities.
5. Synovitis and arthritis of the shoulder joint.
6. Injury of the supra-spinatus tendon, of the long head of the biceps, of the attachment of the latissimus, of the teres major. Sprain of the rhomboideus minor.
7. Injury to the brachial plexus.
8. Subdeltoid and other bursa—periarthrititis.

### B. Infection:

1. Infection of the component bones of the shoulder joint.
2. Infection of the shoulder and acromioclavicular joints.
3. Infection of the bursæ about the shoulder joint.
4. Infection of the tendon sheath of the long head of the biceps.
5. Extension of infection from the soft parts about the shoulder joint.
6. Infection in the supra-spinatus tendon.

### C. Cervicobrachial neuritis.

### D. New growths.

To discuss the symptomatology and diagnosis of all the above would carry us too far afield.

In the diagnosis of any given shoulder con-

dition nothing is of more value than a satisfactory *x*-ray picture both for its negative evidence and for such positive bone, joint or other lesion which it may show.

It is my purpose to call to your attention a group of cases variously classified as *periarthrititis* (Duplay), *subdeltoid bursitis* and *subacromial bursitis*; and pathological conditions in the *supra-spinatus tendon*.

The essential feature of all of the above for which the patient seeks relief is a stiff and painful shoulder. The onset may be very sudden (acute) or very gradual (chronic) and the onset of the pain and the disability will be sudden and severe, or gradual and dull and aching in character, with many gradations of severity in the varying types.

*Etiology.*—The history given by the patient may give trauma either definite in his own mind or relatively clear as the exciting cause. Brickner considers that the compression of the bursa and of the supra-spinatus tendon, between the greater tuberosity of the humerus and the acromial process, to be the most common cause. Codman considers the lesion most commonly a tearing of the fibres of the supra-spinatus tendon, more or less complete and due to trauma.

Certainly in many of the cases some history of over-exertion, especially in abduction or hyperabduction of the arm, is given. In many cases there is no obtainable history of trauma, but some history of a preceding infection, tonsillar, dental, gonorrheal, coryzal, or otherwise, in which after ordinary use the shoulder disability occurs.

Recently in women there has been a constant query—"I drive my closed car with the window open on my left side, can it be the cause of my trouble?" and the lesion invariably is in the left arm. The coincidence if nothing else is striking.

In other cases Brickner mentions some undetermined metabolic process which causes these sub-bursal lime deposits in the tendon.

*Pathology.*—The lesion most commonly found is an adhesive subdeltoid bursitis, most marked in the region of the greater tuberosity. These

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adhesions may be and usually are localized to portions of the bursa, and the remainder of the bursa is free. The bursa may contain organized pieces of fibrin similar to those found in the chronic inflammations in joints. There may be a villous hypertrophy with papillary outgrowths usually from the wall next to the bone. Occasionally the bursa may be separated into locules with a serous effusion in one or more of these pockets, as has occurred in Brickner's cases.

Tuberculous infection is very rare. In the only case I have seen the focus originated in the greater tuberosity, that is, it was a tuberculous osteomyelitis and involved the subdeltoid bursa secondarily.

In another group the lesion most easily demonstrable is a deposit of lime and other material chiefly in the supra-spinatus tendon, rarely in the infra-spinatus tendon. This deposit is considered by Codman, Brickner and others to be due to an injury to the tendon with hemorrhagic infiltration of the tendon, then necrosis of the tendon and the subsequent infiltration by the mineral salts. To this condition Moschowitz has given the name tendonitis. The deposit is in the tendon and in the periosteal attachment of the tendon to the periosteum and beneath the floor of the bursa.

Until recently all the cultures in my cases have been sterile but in three recent cases with pronounced acute clinical phenomena, organisms have been grown from the involved tendon, in two a hemolytic streptococcus and in one a hemolytic staphylococcus aureus. In two of the cases the possible original source of the infection was demonstrable. In one, a doctor, an infected tooth yielded a streptococcus similar to that recovered from the shoulder, and in the other, a woman, there was an infection of the cervix uteri, probably gonorrheal in origin, although the only recoverable organism by culture was a hemolytic staphylococcus aureus. In both, the original infections were treated after the shoulder had yielded the positive culture. Both were very acute cases with persistent symptoms and perhaps the early operations for relief explains the recovery of the organisms. In the third case there was a residual infection in the antrum following a cold, but no definite information as to the infecting organism could be obtained and the culture from the nose was too

indefinite to fasten upon it as the source of the infection.

The histopathology of the tendon varies with the lesion. Codman describes an actual tear in the tendon with hemorrhage, etc. None of my cases showed such a lesion and in none was there any blood pigment. In the acute cases there was a mass of necrotic detritus surrounded by tendon cells in various stages of necrosis, which gave a blue reaction with hematoxylin as described by Moschowitz. In these cases there was some polynuclear infiltration, most marked in the three cases in which organisms were obtained on culture, with round cell infiltration, but in none were these infiltrations particularly marked. As Moschowitz pointed out, there was none of the ordinary reactive tissue such as is found in the ordinary inflammations in soft tissues in the involved tendons. Between the tendon bundles, in the older cases, there is densely organized connective tissue which surrounds calcareous material. (For a more extensive review of the histopathology, Moschowitz's article should be read.)

*Symptoms.*—Pain is constant. In the acute cases this is agonizing and completely disabling, and the pain and the disability are out of proportion to the lesion found. The pain is not localized but is given as in the shoulder and worse over the deltoid regions. It may radiate down the arm and as far as the fingers. In the chronic cases it is dull aching in character with intermittent exacerbations especially after use of the arm.

Disability is also constant. In the acute cases this is complete and the patient will permit no abduction of the arm. In the chronic cases the disability is variable but abduction is always limited and painful. External and internal rotation are both limited, especially the latter.

*Examination.*—There is atrophy of the deltoid and suprascapular region with flattening of the shoulder and prominence of the head of the humerus. Points of tenderness are occasionally present and when pressure over the greater tuberosity gives acute pain it is significant. The other tender points are too variable to be of value. Dawbarn's sign has not been of value in my experience, because it has been impossible to abduct the arm sufficiently to cause the tender point to disappear beneath the acromion.

*Diagnosis.*—A satisfactory x-ray picture of both shoulders with the humerus in the same position, is of the greatest importance. If a deposit is shown in the region of the greater tuberosity the diagnosis can readily be arrived at; if negative it does not exclude inflammation in the bursa. The x-ray also gives valuable evidence of other lesions.

*Treatment.*—For purposes of treatment one must separate these cases with their many variations into various groups. Brickner gives the types as acute, hyperacute, chronic, chronic with exacerbations. Personally, I prefer to separate them into: (1) Those with deposits in the tendon as shown by the x-ray. (2) Those with no deposits.

In the cases with deposits in the tendon we have the acute cases with severe pain, rapid atrophy of the deltoid and complete disability. For these complete rest, preferably in bed, a sedative, morphine, if necessary, and hot moist applications locally, give the most relief. As a rule the acute symptoms subside in from three to seven days. In my experience dry heat, diathermy and massage increase the pain without benefiting the patient otherwise and are not indicated. Operation may be indicated (*vide infra*).

In a large majority of cases the acute symptoms subside and recovery is gradual aided by heat, massage and exercises and the gradual abduction method suggested by Brickner. In some the pain becomes of the chronic type.

In the chronic cases with deposits, abduction, massage and exercises usually give relief. When recurring attacks occur, especially with increase in the deposit in the tendon, operation is indicated and possible sources of infection should be carefully sought.

*Operation.*—Opinions as to operation vary. In my experience operation gives relief more quickly than any other form of therapy, especially in the acute cases with a large deposit. Just when to operate is a question, but the relief obtained after the release of the broken down material by operation and the rapid return of function is striking.

In the chronic cases with repeated exacerbations operation seems much more certain to give relief than the more conservative methods.

*Technic.*—Split the fibres of the deltoid muscle on a line from the acromioclavicular joint downward, separating the fibres of the muscle by sharp dissection. Open the bursa and explore it, treating such changes as are found there. In the region of the supra spinatus tendon beneath the floor of the bursa there is usually a yellowish deposit which is removed by cutting through the posterior wall of the bursa and completely excising the involved area. If the tendon is torn it can be sutured. Defects in the tendon may be closed by suture although this is not essential. The floor of the bursa is then closed. The soft structures are closed in layers without drainage and the patient put to bed with the arm abducted alongside of the head. Early motion is indicated with abduction, exercises and later Indian clubs. An electric pad over the shoulder gives some relief after operation.

In the chronic cases with no deposits but with complete loss of shoulder motion, manipulation under anesthesia is advised. Adhesions can be felt to break during this procedure. Manipulation is continued until the passive motions of the shoulder are normal. This is followed by abduction, heat and exercises.

In the less severe cases, when anesthesia is undesirable, gradual abduction as suggested by Brickner should be used. Massage, guided active movements and then exercises are valuable. The electric pad worn for hours has been as satisfactory, in my hands, as diathermy, dry heat and other forms of heat.

In the acute cases manipulation is contraindicated. Rest usually in bed and moist heat with a sedative, if necessary, give more relief than any other procedure. When the acute symptoms subside the gradual abduction, etc., mentioned above should be used.

*Medication.*—Except for morphine and codeine very few drugs help. Occasionally atophan, cinchophen, tolysin given in seven and one-half grain doses every four hours gives some relief.

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## DIVERTICULITIS

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BY the term diverticulum we mean a circumscribed dilatation of a part of the wall of any hollow viscus. Diverticulosis means the presence of diverticula, usually not giving symptoms, and the seat of no other pathology. Diverticulitis is a condition in which there is an inflammation of a diverticulum, and usually means that the condition is located in the lower third of the large intestine.

### OCCURRENCE

From the older statistics, this would appear to be a rather unusual lesion. The first case reported was found at an autopsy in 1710. Virchow in 1853 wrote of the disease. Klebs, in 1869, first called attention to the relationship of the formation of diverticula to the vessels in the intestinal wall. In 1898 Graser confirmed the above by work done upon twenty-three portions of healthy intestines, and reported that he found, on microscopic examination, a more or less typical diverticulosis in the region of the pelvic colon; there were no naked eye findings; there were a few cases showing a venous congestion without inflammation. In the reports of autopsies done upon twenty-eight subjects, he found, on microscopic examination, ten with diverticula. In forty autopsies Zudeck found fifteen with diverticula. DeMounges by naked eye examination of the intestines of 100 autopsied old people found thirty with diverticula. Judd, writing in 1924, states: "In the clinic during the last year, a third of the positive *x*-ray examinations made of the colon disclosed diverticula or diverticulosis." Spriggs, in 1,000 consecutive cases in which an *x*-ray examination of the intestinal tract was made, found 10 per cent with some state of diverticulosis. In 8,132 autopsies in Dresden, diverticula were found in sixty-four. In 2,600 autopsies at Johns Hopkins Hospital, nineteen were found with diverticula. In the thirty cases autopsied by Drummond, no decompensated hearts were found, and in only a few was a condition of venous engorgement found.

### ETIOLOGY

Diverticula are either congenital, as a Meckel's

variety, or acquired. The pulsion diverticulum is the usual type found, and occurs most often in the lower third of the large intestine. Hedinger has described a diverticulosis in a newborn child. The muscle defects and vessel holes are the weak points of the intestine. Where, with the above, the increased intra-intestinal pressure from gases, or hardened feces, is added, we have ample reason for the development of diverticula. Particularly when the large intestine contracts during peristalsis, the pressure is increased, and a weakened point will develop and increase, just as a Zenker type of esophageal diverticulum is aggravated by the increased pressure exerted on a weak point of the esophageal wall during deglutition.

Keith feels that diverticula are evaginations of the mucosa through the muscle coat at weak points in the intestinal wall, caused by the increased intra-intestinal pressure. He has demonstrated a contraction of the tenia in the segment of the intestine where diverticula occur. This condition is not always found. The increased pressure within the intestine is not the most important factor in the development of diverticula, as in obstructions from any cause the intestine above the stenosis is usually found to be normal. Judd states: "The inherent weakness combined with the pressure of feces and gases in the intestine is undoubtedly responsible for the condition." The traction type of diverticulosis rarely is found in the intestine. It did not occur in any of our cases. It is unusual for diverticulosis to be discovered or to develop before the fortieth year. The average age is between 45 and 55. In our series the average age was 57+ years. It is said that one hardly need consider the presence of diverticulosis in any individual under the age of 45, but Ashurst reports finding diverticulosis in a child of seven. Hausemann could not produce diverticulosis experimentally in the intestines of young people. He was able, however, to produce a similar condition in the intestines of older people.

Diverticulosis is found most often in obese males. In Mayo's forty-two cases, the heaviest

patient weighed 220 pounds, the lightest 120. Some observers find diverticulosis commonly in thin individuals; our people were all obese. Constipation is the rule. There may be periods of diarrhea, with mucus and blood in the stool.

#### PATHOLOGY

Diverticulosis is a primary condition, and will be progressive. It may be found in any part of the gastro-intestinal tract, from the esophagus to the rectum, including the appendix. The descending colon is the usual location. They may be single or multiple; as many as 400 have been found in the intestine of one individual. In all of our cases the sacs were multiple. They are very often found in rows on either side of the bowel wall, close to the mesocolic band, very often involving the appendices. When this condition is present, the sac points toward the mesocolic band. In some cases the entire wall has been involved.

Early, the sac wall may have the normal intestinal coverings; later only the mucosa and serosa may be present. The mucosa may be atrophic and still the wall may be found to be an inch in thickness, particularly in cases of peridiverticulosis. Torsion of the sac may occur. The sacs vary in shape from a microscopic point to a sac the size of a lemon. Should inflammation or new growths be added, the size may be much larger. The sac is most often shaped like a flask, the neck near the intestine being narrowed. Inflammation is prone to occur as the feces tend to become dried out and hard, and irritate the sac wall. The swelling accompanying the infection narrows the neck of the sac and makes an imperfect drainage. Once the inflammation is present, it may subside after the acute stage and reappear at variable intervals, following an acute respiratory infection, as in two of our cases, or go on to a chronic stage, with greater swelling, gangrene, and perforation, resulting in a local or general peritonitis, abscess, or fistulous formation. During the acute or chronic period, with or without a demonstrable involvement of the mucous membrane, the infectious process may involve the serosa over and near the sac, and spread to the mesentery. This is called a peridiverticulitis. The increasing inflammatory disease may lead to a tumor formation or constrict the lumen of the intestine. Per-

foration of one or more diverticula may occur as in the Telling series (28.4 per cent). A general peritonitis will follow should no adhesions wall off the perforated area. Should adhesions occur, a local abscess will follow. Fifield found twenty-one of his cases with abscess formation, and only twelve cases with general peritonitis. Often a number of abscesses may result; these may coalesce, burrow through the different coats of the intestine, into the vagina, anus, or externally. Should this occur, a cure might result in case no fistulæ followed. A metastatic infection may localize in any part of the body, but usually occurs in the liver. In Telling's series, fistulæ occurred in 19.8 per cent of the cases. They may be sigmoido-vesicle, recto-vesicle, sigmoido-uterine, anal, and external. The sigmoido-vesicle fistula is the commonest found, especially when a tumor mass is present near the urinary bladder. These masses were formerly all thought to be malignant. In one of our cases, a sigmoido-cutaneous fistula appeared postoperatively. Adhesions are found frequently attached to the small intestine, urinary bladder, parietes, and pelvic organs. Adhesions to the small intestine may constrict the intestine, causing an obstruction.

The association of carcinoma of the intestine with diverticulitis is a very important study and one in which there is some uncertainty. It is the same interesting association occurring in other parts of the body: the stomach, kidney, lungs, and appendix. As Dr. William Mayo writes, "The only known fact of importance in the etiology of carcinoma is its relations to chronic irritation. The term pre-cancerous is used to denote certain cell changes taking place in the area of chronic irritation, which, if found in connection with invasion of the tissues, would be typical of carcinoma." It should be realized that by the chronic irritation of an inflamed sac by hardened feces, in the presence of an increased blood supply, the changes spoken of by Dr. Mayo might be produced. However, this condition has not been produced experimentally.

A review of the opinions of the various authors is interesting. In McGrath's twenty-seven cases, carcinoma was found in seven. In Dr. William Mayo's forty-two cases, carcinoma was found in thirteen. In Telling's 105 cases, carcinoma was found in one, and he records find-

ing eleven other cases. In our series, carcinoma did not occur. Judd, in 118 cases, did not find carcinoma, but during the same period he found nineteen cases of diverticulosis associated with carcinoma. He states, "It is probable that a

autopsy, and by the fact that 40 per cent of Telling's 105 cases had no symptoms, and in Judd's 615 cases only 137 had symptoms sufficient to warrant surgery. All of our cases presented symptoms at one time or another. The

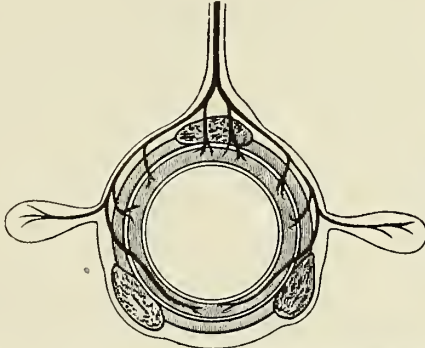


Fig. 1. Entry of blood vessels into intestinal wall. (From H. Drummond, Brit. Med. Jour.)

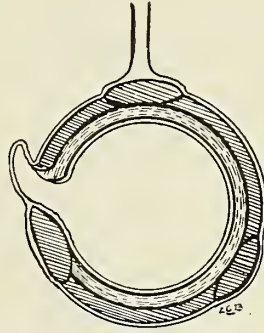


Fig. 2. Beginning diverticulosis. (From H. Drummond, Brit. Med. Jour.)

patient with diverticulosis is no more likely to develop malignancy of the colon than one without it." Drummond, in thirty cases, does not mention carcinoma. Erdmann feels that carcinoma is "coincidental and not the result of disease." Giffin found that for every case of diverticulosis resected, seven carcinomas were resected. Fifield in 218 autopsies and fifty clinical cases, makes no record of finding carcinoma. Mandl, in reporting 1,500 cases of carcinoma of the lower colon and rectum, does not mention diverticulosis. Ewing, quoting Mya, Lowenstein, Keible, and Stieda, states that none of the disturbed developmental conditions of the intestine seem to be directly connected with tumors, that is, carcinoma.

Carcinoma occurring so infrequently in association with diverticulosis makes one wonder whether or not the association is not one of coincidence. The fact that both conditions have a predilection for the lower half of the colon makes the idea of coincidence more probable, a similar relative relationship existing as between peptic ulcer and carcinoma of the stomach.

#### SYMPTOMS

A diverticulum may occur and give no symptoms until infection, the sequelæ of infection, or new growths appear. This is confirmed by the frequency with which diverticula are found at

classification of Dr. William Mayo is excellent and is as follows:

"Group 1. Self limiting diverticulitis or peridiverticulitis."

This is the commonest group, found in middle aged, obese males, who give a history of constipation with attacks of colicky pain, appearing suddenly and localized deep in the left lower quadrant of the abdomen. The pain lasts from a few hours to several days. This is usually associated with tenderness which is localized in the left lower quadrant of the abdomen. A constant fever, as high as  $104^{\circ}$ , chills, or chilly feeling, may be present, with or without vomiting. The white blood count in our cases ran from twenty to thirty thousand. The records show that these attacks had persisted from seven days to twelve years. The average duration is two years. In our cases, the attacks have been present for two and a half years, the pains lasting for one or two days, followed by a tenderness or soreness of from two to five days. Constipation has been the rule. Blood was found in the stool in only one of our cases. Most of our cases fall into this group. The attacks in two were preceded by acute upper respiratory infections. The pain, tenderness, fever, white blood counts, were as described above. The proctoscopic examination was negative. The fluoroscopic examination showed the sacs. The early

plates showed the sacs, and later dark shadows typical of diverticulosis. In two of our cases it was impossible to make an early diagnosis by *x*-ray, due probably to the sacs being filled and a poor drainage. It is usually best to make an

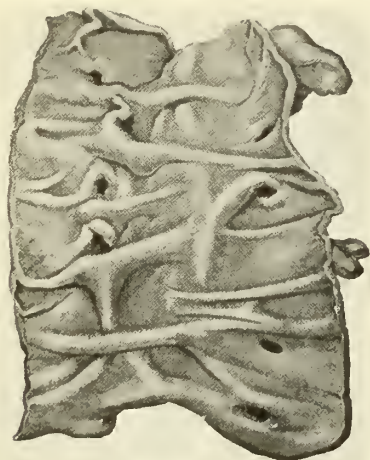


Fig. 3. Openings of diverticulum into bowel lumen. (From H. Drummond, Brit. Med. Jour.)

*x*-ray examination between the attacks unless the symptoms are severe or continue for days.

"Group 2. Diverticulitis and peri-diverticulitis, with formation of abscess resulting in entero-vesicle, entero-cutaneous, or other fistulæ."

None of our cases has been in this group. Telling found that 19.8 per cent of his cases were in this group. The history is the same as in Group 1, except that the symptoms are more prolonged and severe. A tumor may appear and disappear. Should the fistulæ connect with the urinary bladder, the patient will complain of bladder frequency and irritation, and the urine will contain pus and fecal material. The sigmoido-vesicle is the usual type; fistulæ may connect with the cutaneous tissues, the sinus discharging pus and fecal material. The same will occur should the fistula connect with the vagina.

"Group 3: The obstructive type."

In acute diverticulitis and peri-diverticulitis the obstruction is the result of infection and edema. In the obstruction type it is due to hyperplasia, adhesions, and angulation. This is most often found in the descending colon. The symptoms are more severe and prolonged than in Groups 1 and 2. In one of our cases, Mrs. D., an obese female, aged 54, complained of recurrent attacks of left lower quadrant distress, with fever, ten-

derness, increasing constipation, and abdominal distension; suddenly a severe constant pain appeared in the left lower quadrant of the abdomen. She was in shock and could not pass flatus. On examination, a tumor mass was found which was thought to be a malignancy. She was operated upon for the obstruction and a colostomy was done. The surgeon still felt that he was dealing with a malignancy. Her condition improved. She did not lose weight. Her blood remained normal. The stools did not contain blood. The proctoscopic examination was negative. The *x*-ray examination did not suggest the presence of a malignancy. Later, a resection of five to six inches of gut was done, and on microscopic examination no carcinoma and only a peri-diverticulosis was found. She recovered. In our second case, an obstruction appeared suddenly, followed by a perforation and peritonitis. The man was operated upon and a resection done. He had had attacks for years. Between the attacks there were no symptoms whatever.

"Group 4. Carcinoma associated with diverticulosis."

This did not occur in any of our cases, and has been discussed.

#### DIAGNOSIS

Diverticulosis will be discovered by a routine examination when no symptoms exist. When an individual, particularly an obese male, complains of attacks of pain, with tenderness in the left lower quadrant of the abdomen, fever and constipation, the general examination except the abdomen is found to be negative, the proctoscopic examination is negative, and the *x*-ray is positive, a diagnosis may be made. However, with the above history, a partial obstruction, the presence of a mass, a normal proctoscopic examination, and an *x*-ray examination pointing to a stenosis of the gut that suggests a benign condition, it may require a microscopic examination to determine the true condition, as in one of our cases. The stool is usually a constipated type, dried and hard. The caliber is smaller than normal, and a small amount of mucus may be found. Pus cells may be present when a fistula or ulcer exists. The proctoscopic examination is of value to show whether or not the mucosa is intact. We have not seen a diverticulosis by proctoscopic examina-

tion. The  $x$ -ray is of great diagnostic value. The screen examination will show the sacs, which later remain as dark shadows in rows near the bowel lumen after the bowel has been emptied.

fluids, and is given a diet of pureed vegetables, cooked fruits, coarse bread and butter, cooked cereals, soft puddings, cocoa, meat, eggs, milk, cheese, and gelatine. Locally one ounce of a

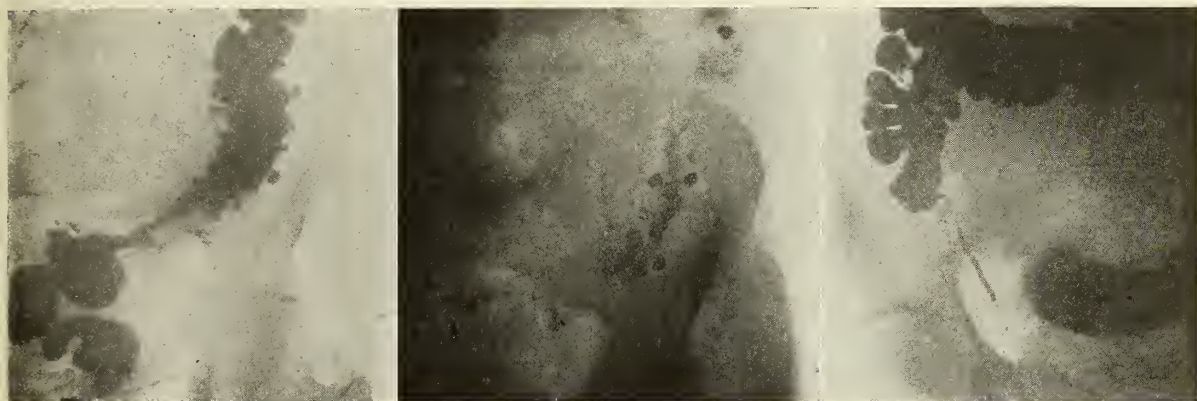


Fig. 4. Diverticulosis with obstruction.

Fig. 5. Diverticulosis obstruction—24 hours after enema.

Fig. 6. Spasm from appendix, not diverticulosis.

A stenosis and fistula may be demonstrated. A cystoscopic examination may be helpful should a sigmoido-vesicle fistula be present.

Carcinoma must be differentiated. The early mucosa involvement may be demonstrated by the  $x$ -ray and proctoscope. The stool usually will contain red or white blood cells with mucus. The general blood examination may show an anemia. There may be no other symptoms, as in the case of Mrs. P., who complained of a heaviness localized in the middle of the abdomen. It was constant. A small diverticulum was demonstrated one time by screen examination, never to be found on second examination. Her stools were negative. Repeated  $x$ -ray examinations were negative. She was operated upon, and a primary lymph gland sarcoma was found in the mesentery which had extended to the bowel.

#### DIFFERENTIAL DIAGNOSIS

Neoplasms, carcinoma or sarcoma, tuberculosis, chronic appendicitis, parasitic diarrheas, chronic ulcerative colitis, syphilis, pelvic disease in women, foreign bodies, and vesicle tumors must be differentiated.

#### TREATMENT

The treatment depends upon the findings. In Group 1, the patient is first seen during an attack; the treatment is aimed at relieving the acute symptoms. The patient is put to bed, a tepid sponge given, he is encouraged to drink

1 per cent aqueous solution of mercurochrome is injected into the rectum, to be retained as long as possible. Heat is applied externally. In our hands, the acute attacks gradually subsided, the fever reaching a normal point in twenty-four to forty-eight hours. The pain disappeared usually within twenty-four hours, and the tenderness within two to four days. We advise that the daily mercurochrome injection be continued for two or three times after the last symptoms have subsided. The patient remains in bed at least two days and gradually resumes his usual routine. Should an acute upper respiratory infection be present, this infection is treated in the usual manner. Between the acute attacks, constipation should be avoided by regular habits, proper diet, with a sufficient quantity of vegetables, fruits, etc., and exercise. He should be taught to regulate the diet so that the stool is of soft consistency and a cylindrical shape. The obesity should be reduced by diet, exercise, and a gland extract when necessary. By the above regime, we have carried patients along for several years, comfortable, happy, and having few attacks, and without surgery.

The remaining conditions of groups are surgical. Should a malignancy be suspected, immediate surgery should be insisted upon.

We must bear in mind that this is a serious condition, carrying a mortality of from 12 to 25 per cent. The fact that diverticula are multiple and may be extensive makes surgery difficult.

In our series of 12 cases, there were four women and eight men. The average age was 57+ years, the average weight 177 pounds. Four of the series have needed surgery, two because of obstruction due to peri-diverticulitis and angulation, one because of a perforation, one because of increasing symptoms, in which an exploratory was made and a sarcoma of the mesentery was found. Carcinoma in association with diverticulitis did not occur. There has been no mortality.

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## CLINICAL SIGNS AND TREATMENT IN DIABETIC ACIDOSIS\*

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**D**URING the past four or five years, representing the period since Insulin has been generally available, I have accumulated a series of 20 cases of severe diabetic acidosis and coma, which represent the basis for this discussion. These cases were seen in part in private practice and in part in the Diabetic Clinic at the Minneapolis General Hospital.

It is generally agreed that one of the unfortunate tendencies of modern medicine is toward the replacement of clinical observation and study by laboratory methods. With this in mind in this brief discussion it seems well to stress again the clinical signs and symptoms incident to diabetic acidosis and for the most part laboratory procedures will be disregarded.

The first clinical sign of diabetic acidosis to which I wish to call attention is the acetone odor which is almost always very easily detected on the breath of the patient. This peculiar odor should always be looked for and while not inherently diagnostic, should warn one of the possibility in practically every case. However, it is strongest in the most severe cases and in early cases may escape detection.

The next clinical sign which can easily be noted in every case is the peculiar type of respiration associated with this condition. This may best be described as a marked increase in the depth of respiration and also, though not as marked, an increase in frequency of respiration. There is no cyanosis present. This peculiar type of dyspnea or hyperpnea is typical of this condition alone and is always present.

Another clinical sign to which I do not believe enough attention has been directed is that of decreased intra-ocular tension. This is always marked in the comatose cases and is very easily detected by the palpating finger in only a moment. I have watched carefully in every case for this manifestation and have on at least two occasions been saved from ignominious error by its absence. A case in point is that of a girl, aged 19, who was found in bed in a coma-

tose condition. The urine was obtained by catheter and large amount of sugar found to be present. The specimen had been discarded without any test for aceto-acetic acid. The only history obtainable was that the previous day the patient had had a severe shock due to the accidental death of her brother and had vomited several times during the afternoon and evening. I was asked to see her at 4 a. m. by the surgeon who had been called in attendance and to direct her insulin regime. On examination the outstanding facts were that the tongue and mucous membrane of the mouth were normally moist and that the eyeball tension was normal on palpation. While examining her the nurse came in to give 40 units of Insulin which had been previously ordered. Fortunately there had been a delay. Careful physical examination showed an evidence of septic abortion with a cerebral thrombosis. Blood sugar when available several hours later was found to be .09 per cent. This patient could very easily have been killed through a hypoglycemic reaction had the large dose of Insulin been given. Had it not been for the absence of these, to me, two cardinal signs I would surely have been in error.

Another case was that of a mild diabetic of many years standing, who was found unconscious, and here again the normal eyeball tension and moist mucous membranes alone made one suspicious of a vascular accident. Autopsy showed a cerebral thrombosis. Where a known diabetic is found unconscious it is very easy to jump to the conclusion that diabetic coma has occurred, but the high-grade arterial degeneration is becoming much more frequent as a cause of death.

The dryness and desiccation of the tongue and mucous membrane of the mouth are not peculiar to diabetic acidosis alone but will always be found in this condition. Their absence should cause one to check up carefully for other causes for unconsciousness.

Other frequent clinical manifestations include a peculiar facial expression of anxiety. The face is frequently flushed, especially the fore-

\*Presented before the annual meeting of the Northern Minnesota Medical Association, St. Cloud, Minn., Sept. 12 and 13, 1927.

head. The mental condition frequently is sluggish and the patient may give the appearance of lassitude. These latter manifestations are also seen in moderate hypoglycemic reactions.

Vomiting and abdominal pain have been concomitant factors in many of these cases. The vomiting shows nothing characteristic but the pain has been found to be chiefly localized in the upper abdomen and is similar to that occasionally seen in severe toxemias of pregnancy.

While this discussion is limited to clinical signs I wish to digress for one point from the laboratory, namely leukocytosis. An increase in the number of white blood cells has been present in every case in this series in which blood counts were available. This increase has ranged from 13,000 to 22,000. It has always returned to normal with the clinical recovery and no definite cause has ever been ascertained in many cases. This leukocytosis when combined with abdominal pain and vomiting is most disquieting to one's peace of mind unless the patient has fortunately had a previous appendectomy. In only one case in this series has a surgical diagnosis been made and this was with many misgivings; but exploratory laparotomy, fortunately for the diagnostician, revealed an acute gangrenous appendix.

This laboratory finding is mentioned in this clinical discussion largely because I have not seen much prominence given to it in the literature and to call attention to its constant presence in these cases.

Of all the clinical signs, those which have impressed me as the most important are: the changed respiration, the decreased ocular tension, and the dry tongue and mucous membranes. They have been constantly present in all of these cases and together with the finding of glycosuria and aceto-acetic acid they make the diagnosis in every case.

While further laboratory studies such as alveolar carbon dioxide and the combining power of blood plasma are indeed useful, their chief aid is in checking the progress of the patient's condition.

One cannot help but feel that far too often the diagnosis of diabetic acidosis in its earlier stages is being overlooked and in its later stages made largely upon blood chemical findings when closer and more careful observation would give the desired information.

#### TREATMENT

In this series there are sixteen cases representing twenty attacks of severe acidosis or coma, this condition having occurred twice in four cases. No case has died of diabetic acidosis although apoplexy, meningitis, and pneumonia have each caused one death. Death, however, occurred after the patient was sugar-free and after acid bodies had disappeared from the urine, so that I feel we may fairly claim a recovery from the diabetic condition.

The regime of treatment may be divided into two divisions: (1) The general management; (2) insulin administration.

The general management of these cases has been along the precepts laid down by Dr. Joslin many years ago: Reassurance; warmth; gastric lavage if vomiting exists; tap water or normal saline enema; forcing fluids; and digitalis.

Cathartics have not been given in any of these cases as they are felt to be contraindicated.

Fluids have been given both by mouth where possible and by proctoclysis but in the great majority also by hypodermoclysis. The addition of 1/16 per cent nococain to the solution has made this much less disagreeable for the patient and in practically every case two liters have been given and repeated in eight to twelve hours until the patient was able to take fluids by mouth in reasonable volume.

Digitalis has usually been given as digifolin hypodermically and kept up until the patient was apparently out of danger.

*Insulin.*—The amount of insulin and period of dosage naturally have varied greatly with the severity of the condition. As small an amount as 50 units has been used and in one case over 300 units were given during the first twenty-four hours.

Where acidosis is not present in large amounts and vomiting has not yet occurred, it has been our practice to use a moderation of the regime first suggested by Dr. Woodyatt. This might be called a four hour regime. The patient is asked to void and then given 240 c.c. of milk. Ten to twenty units of insulin are given at the same time. Fluids are given by mouth to the limit of the patient's ability and at the end of four hours all the urine is saved and quantitatively tested for sugar. Another similar period is then started, the insulin being increased or decreased as indicated by the urinalysis. This is

kept up for successive periods until the patient is sugar-free, when the periods are increased to six hours as in the Woodyatt regime and the amount of milk increased to 400 c.c. Knowing the amount of insulin necessary for the six hour period it is easy to calculate the amount necessary for twenty-four hours and the patient is put on three feedings, six hours apart, each preceded by the appropriate dose of insulin, *i.e.*, one-third of the total dose of insulin.

The first night a specimen of urine is tested at midnight and if sugar is found an additional small dose of insulin is given at this time. It has been our practice to test the urine at midnight until it has been sugar-free two consecutive nights.

In the more severe cases, insulin is usually given at first intravenously, the initial dose usually being 30 units. This has sometimes been partially buffered by glucose but more often without. The insulin dosage has then been repeated

every two hours until the glucose disappeared. Following this the interval has been increased between doses and milk or orange juice given with insulin as soon as the stomach will tolerate such food. Following this the patient is put on a four to six hour regime as described above. In only one case has it been necessary to give glucose intravenously to buffer the insulin after the patient became aglycosuric.

Too much stress cannot be laid upon the fact, that the management of severe acidosis or coma is a practically continuous procedure for the first twenty-four to forty-eight hours. The patient must be seen frequently and his insulin dosage be graduated as the condition changes. Fluids must be forced and both insulin and fluids must be kept up after the patient becomes sugar-free. The four and six hour regime which I have detailed has been most useful and I have yet to see an uncomplicated case retrogress where it has been conscientiously followed.

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#### ERUSTICATOR

The A. M. A. Chemical Laboratory reports on the composition of a poisonous rust remover. A physician had reported the death of a baby, who died ten minutes after biting into a tube of "Erusticator." The product is put out by the Sterling Products Company of Easton, Pa. It was not labeled "Poison." Analysis showed that the preparation was essentially an aqueous solution of a mixture of ammonium and hydrogen fluorides (generally designated as ammonium bifluoride) equivalent to 36.3 per cent ammonium fluoride, and 16.9 per cent hydrogen fluoride. The sale of such poison without fair warning to the consuming public is to be deprecated. (Jour. A. M. A., January 21, 1928, p. 205.)

#### DESICCATED PARATHYROID GLAND PREPARATIONS OMITTED FROM N. N. R.

The general article Parathyroid Gland, in New and Non-official Remedies, 1927, states that there is no conclusive evidence for the oral use of parathyroid gland preparations. In 1926 the Council decided to omit all such preparations with the close of 1927 unless in the meantime evidence should develop to show that they were effective. No such evidence has developed. On the contrary, evidence in the opposite direction has become available. Accordingly, the Council directed the omission of all the accepted brands of desiccated parathyroid gland from New and Non-official Remedies. (Jour. A. M. A., January 14, 1928, p. 117.)

## NEURO-SYPHILIS—SOME PERSONAL OBSERVATIONS\*

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DURING recent months a good deal has been written about the treatment of general paresis with tertian malaria, and about the use of tryparsamide instead of the former classical treatment in syphilis of the central nervous system. But very little has been said about the handling of cerebro-spinal syphilis in those cases where for one reason or another the usual forms of treatment cannot be employed. Every medical practitioner who undertakes the treatment of cerebro-spinal syphilis knows that he meets a certain number of cases in which the routine methods of treatment cannot be used because of toxic reactions of one kind or another, or because of definite intolerance to spinal therapy, which certain individuals possess. Having recently met an unusually large number of such cases, it seems that a brief discussion of this phase of the treatment of neuro-syphilis is worth while.

From the standpoint of pathology, syphilis of the nervous system divides itself into two large groups. The first of these is the so-called interstitial or diffuse type, in which the lesion is inflammatory and not degenerative, and is confined to the blood vessels and meninges. The second of these two types is the so-called parenchymatous type, in which the lesion is degenerative as well as inflammatory and in which there is structural change in the tissues of the brain and cord themselves. In the first group, we find the early cases, which are considered curable. In the second group are tabes dorsalis, general paresis and tabo-paresis, which are incurable. Except in well defined and advanced cases of tabes or paresis, the differentiation between the first and second groups cannot be made by means of clinical symptoms alone, but must be verified by spinal fluid examination. The correct interpretation of the colloidal gold curve often determines not only the treatment but the prognosis in these cases.

The question frequently arises as to how soon after the initial lesion, symptoms of neuro-

syphilis may appear. An average length of time would probably be from five to ten years. That is, that five to ten years after the initial lesion the symptoms of neuro-syphilis attract the individual's attention enough to induce him to consult a physician. Exceptions occur, however, and the writer can recall a case in which a very acute cerebro-spinal syphilis came on three months after the initial sore. In any event it is inexcusable not to have a spinal fluid examination in every case where there is a definite syphilitic history or a history of promiscuous sex indulgence, regardless of the time which has elapsed, providing suspicious symptoms exist. In many early cases where actual reflex changes have not yet appeared and where physical and neurological examinations are negative, a diagnosis of neuro-syphilis can be made by the finding of a positive spinal fluid, and as the success of the treatment varies directly with the earliness of the diagnosis, the importance of early spinal fluid examination is obvious.

For the past fifteen years, the method of choice in treating this disease has been the use of combined intravenous and intraspinal therapy. Since Ehrlich's discovery of "606," the intravenous use of arsenic in one form or another has been in the best of repute. An intravenous injection of neosalvarsan, followed in a few moments by a drainage of the spinal canal, has been the chosen method in the interstitial or diffuse cases. These treatments are repeated at intervals of a week for a period varying from eight to fifteen weeks, according to the tolerance of the individual being treated. The Swift Ellis treatment, which consists of the intraspinal injection of an autogenous salvarsanized serum, has been recognized as the best form of therapy for the parenchymatous types. These intraspinal serum injections are repeated at intervals of two weeks over a period of two to six months, as determined in each case by the reactions of the patient. There have been many variations of the above-mentioned treatments devised for individual cases, but in the main these two kinds

\*Read before the annual meeting of the Northern Minnesota Medical Association, St. Cloud, Minnesota, Sept. 12 and 13, 1927.

of therapy have been employed universally. Useful adjuncts to these forms of treatments have been the uses of mercury and iodides.

It is not the intention here to discuss or to criticise the above mentioned methods of treatment. We still use them and believe them to be the most effective forms of treatment for the greater percentage of cases. In addition to them, is the more recent use of tryparsamide, which has proven very effective in the treatment of general paresis. There are, however, certain persons needing treatment for neuro-syphilis who cannot tolerate any arsenic preparation because of an idiosyncrasy. This shows itself, usually, at the second or third injection in the form of a dermatitis, a severe gastric reaction with pain, vomiting and diarrhea or by an attack of actual syncope occurring during or immediately after the intravenous injection. The evidences of an idiosyncrasy to arsenic are positive warnings of danger and must be heeded. Less often than the preceding are those individuals who react very severely to the intraspinal medication or who cannot stand repeated spinal drainages. Persistent headaches, vertigo, nausea and loss in weight to a marked degree in persons under treatment, together with an abnormal dread of the treatments, are among the most important exhibitions on the part of the patient which necessitate discontinuance of spinal therapy.

In these cases where arsphenamine is contraindicated, because of its adverse reactions, or where persistent spinal therapy cannot be carried out, it has been our experience that the best substitute is the use of bismuth. During the past few months we have met several well defined cases of neuro-syphilis of the parenchymatous type, which for one of the above reasons could not tolerate the regular treatment. These persons were therefore treated with bismuth, with the most gratifying results. In fact, it may be said that the results obtained were equal in success to those obtained in similar cases with the use of the arsphenamines. In reviewing recent literature concerning the use of bismuth in the treatment of syphilis, the consensus of opinion seems to be that, while bismuth is not to be considered a substitute for arsenic, it has proven itself invaluable in the cases in which there is intolerance to arsenic and has produced amazing results when used in late cases. By late cases,

of course, are meant tertiary cases, which includes neuro-syphilis. The value of bismuth in early syphilis, that is in the primary and secondary stages, seems to be somewhat problematical, according to recent publications.\* The value of bismuth in place of mercury, to be used in the combined treatment with the arsphenamines, is also considered somewhat doubtful. Its therapeutic value in cases of neurosyphilis which have been persistently treated with arsenic, unsuccessfully or with relapses, has been found to be most satisfactory.\*

As far as our own experience is concerned, we have found it to be more satisfactory than mercury when used in combination with the arsphenamines, because it is much less painful than mercury and because it requires less skill to administer and avoid the painful after-effects; but our chief satisfaction in its use has been in the cases where the usual forms of treatment could not be given because of the patient's intolerance. It is not necessary to devote valuable space and time to the description in detail of the individual cases, but a brief mention of three typical cases, as illustrations, will suffice. These three cases were all tabes—two women under thirty-five years of age and one a man of over sixty years of age. They were all well developed cases; one of the women was bed-ridden, with complete loss of the use of her lower limbs and complete loss of bladder and rectal control. She had to be catheterized regularly twice every twenty-four hours and her suffering with the lightning pains was very acute at times. The other woman was not bed-ridden but was very ataxic in her gait and could not get around on her feet without assistance. She also had considerable disturbance with the bladder control and frequently wet herself. The old gentleman was ambulatory and not at all ataxic, but he had absent knee-jerks and an optic neuritis so severe that his vision was very poor. In each of these three cases, the neo-arsphenamine and spinal treatments were tried. This had to be stopped in the first mentioned case, because of a very severe gastro-enteric reaction; in the second case because of a dermatitis which showed itself after the second intravenous injection of arsphenamine; and in the third case, that of the old gentleman, because of an attack of syncope which came on immediately following the second

\*Brit. Med. Jour., July 20, 1927, p. 172.

injection and in which he nearly died. No one of the three cases had been treated at all before reaching our hands.

Following the very positive intolerance which was shown to the regular form of treatment, each of these cases was put on bismuth. It was given in the form of bismuth salicylate, two grains at a dose, as a deep injection in the muscles of the hip. It was repeated twice a week for a rather indefinite period of time, close watch being kept for evidences of toxicity. In no cases which we have treated with bismuth, have we ever seen any evidences of either toxic reactions or idiosyncrasy. After eight or ten weeks of this treatment, during which time no other form of therapy was used, the bismuth injections were stopped and intravenous injections of sodium iodide given three times a week, thirty-one grains at a dose. This was kept up until the saturation point was reached, when the bismuth injections were again resumed. The sodium iodide and the bismuth are not used concurrently because of the incompatibility which exists between the two. Each of the above mentioned cases has received several courses of this kind of treatment, with results which have been eminently satisfactory. The young woman first mentioned, who was bed-ridden and had complete loss of bladder and rectal control, has improved to a point where she is walking about with the use of a cane and when I last saw her in my office she could walk some without the cane. She has also regained her bladder and rectal control in full and her shooting pains no longer bother her. She has also gained materially in weight and strength. The second young woman, who was markedly ataxic and had some loss of bladder control, has regained the latter in full and has much better use of her lower limbs. In the case of the gentleman with the optic neuritis, this has subsided definitely, as shown by eyeground examination and by the improvement in his vision. His general physical condition is also definitely improved.

Further discussion of bismuth used as an adjunct to arsphenamine and also of its use during the rest period between the courses of regular intravenous and intraspinal medication, must be cut short by lack of time and space. It is sufficient to say that it is so used and that it is found to be very satisfactory. The technic of administration is similar to that of mercury. It

is prepared in small ampoules, put up in oil which requires heating over a flame to liquefy it. It is then drawn up into a 2 c.c. syringe and injected deep into the hip muscles with a long needle of fairly large gauge, similar to that used in giving the salicylate of mercury. These injections are given twice a week, till at least sixteen have been given. After sixteen have been given, if there are no toxic signs, they may be continued or stopped for a time, as the case seems to warrant.

The effect of bismuth in producing serological changes in the blood or spinal fluid in cases of syphilis is not yet determined. Even the most successfully treated cases of neuro-syphilis (from the clinical standpoint) do not always show marked serological improvement. It is now universally recognized among neurologists that in these cases the clinical improvement is much more important than the serological. In early cerebro-spinal syphilis, a complete return to normal of the spinal fluid following treatment is frequently seen. In the later cases, such as tabes and paresis, this is not the case. Wile and Keim of the University of Michigan medical school (*Jour. Am. Med. Assn.*, October 24, 1925, p. 1269) offer an analysis of one thousand cases treated and observed by them and conclude therefrom that the element of the spinal fluid which is most responsive to treatment and return to normal is the lymphocytosis, and the least responsive one the Wassermann reaction. They find that the colloidal gold curve may be reduced to normal in some of the early cases, but rarely in the later ones, and that the chances for reduction to normal of the increased globulin are second to those of reduction in the lymphocytes.

In any event, our prognosis for the future in all of these cases of neuro-syphilis which have been successfully treated is based more upon the clinical picture than upon the serological findings. The maintenance of a good physical and mental condition and keeping well from a clinical standpoint are more important than seeking negative serological findings. The mere existence of a positive Wassermann reaction in the spinal fluid is not considered evidence that further treatment is needed, in cases where sufficient treatment has been given to bring about a satisfactory clinical improvement or recovery. However, a return to positive of a spinal fluid

which has been rendered negative under treatment, or the gradual increase in lymphocytes after having been reduced to normal under treatment, would be construed as forecasting a lighting up of the old luetic process and would indicate that treatment should be resumed. As long as a patient feels well and shows no physical evidences of a relapse, treatment may be suspended with the understanding that he will report

once in six months for examination or return any time that he feels any of his former distressing symptoms beginning; and finally, most important of all, the success of treatment in all of these cases depends chiefly on one thing—namely continuous and persistent treatment, with observation of the patient at regular intervals for at least five years.

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## CEREBRO-SPINAL VASCULAR LESIONS IN THE AGED\*

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CLINICAL syndromes in the aged, dependent on vascular lesions of the central nervous system are frequent occurrences in every day practice. From the simpler functional disturbance as anemia, hyperemia or hypertension to the more severe conditions of apoplexy, aneurysm or generalized softening with its attendant intellectual deterioration, the physician is dealing with a condition largely dependent on the health of the body as a whole, yet whose immediate pathology lies entirely within the nervous system.

The brain receives its supply of arterial blood chiefly from four main vessels, two vertebral and two internal carotid arteries. The union of these four arteries forms a plexus at the base of the brain known as the circle of Willis, from which branches are distributed to both hemispheres. The two vertebral arteries supply the pons, medulla, cerebellum, and to some extent the hemispheres by means of the posterior cerebral arteries. From the circle of Willis branches arise which penetrate deeply into the substance of the brain, supplying such structures as the internal capsule and the basal ganglia, while other branches lie much more superficial, spreading themselves over the surface and sending large numbers of tiny branches into the cortex. To a slight extent there is some overlapping of these two sets of vessels, but there is apparently no real anastomosis between them.

The venous return of blood is taken care of by many small veins which run outward, forming a plexus on the surface of the brain. These, in turn, form larger vessels which empty into the venous sinuses. The venous sinuses are drained principally by the two internal jugular veins, although a small amount may return by means of the veins of the orbit and those of the diploe.

Cerebral circulation is dependent on the same conditions which control circulation in the rest of the body. The brain is a pulsating organ, dilating with each heart beat, and its volume is also influenced by respiration. A rise in blood

pressure causing a general arterial hyperemia results in a general hyperemia of the brain, and the venous pressure, in turn, varies directly with venous congestion elsewhere in the body.

Cerebral hyperemia, under normal conditions, has only a physiological effect such as an increase in mental activity and a feeling of well being. However, if a pathological condition exists, such as tumor, uremia or hemorrhage, resulting in an increase in intracranial pressure, severe headache, impairment of respiration and disturbances of consciousness may result.

Cerebral anemia may be produced by a diminution of arterial supply or by the presence of venous congestion. Hemorrhage, cardiac weakness or the rapid lowering of an intra-abdominal pressure, with the resultant gravitation of blood to that area may bring about a lower supply of cerebral arterial blood. Venous congestion, in itself, unless present in a severe degree, probably gives origin to no symptoms.

The most common vascular lesion of the aged is that which produces a hemiplegia and to which we ordinarily refer as a stroke or apoplexy. The term apoplexy, however, should not necessarily imply a hemiplegic state, but should signify an acute vascular lesion in any portion of the brain, the symptomatology of which will necessarily depend on its location. Hemiplegia in itself is only a symptom and does not at all signify the causative factor which, if due to a vascular lesion, may be thrombosis, embolism, hemorrhage or a simple degenerative process. In the acute stages, it may be impossible to determine whether the process is thrombotic, embolic or due to hemorrhage. However, there are usually some features present concerning the onset, subsequent course, and other physical findings which indicate the nature of the condition. In addition to actual involvement of the vessel walls, the condition of the blood pressure plays a very important part in the etiology of this condition. The presence of a hypertension adds greatly to the frequency of these accidents. Severe hemorrhage, with its attendant shock, may

\*Read before the annual meeting of the Northern Minnesota Medical Association, St. Cloud, Minnesota, Sept. 12 and 13, 1927.

produce a lowering of the blood pressure, so that the examining physician may be deceived as to the condition of the general circulation if the patient is seen for the first time during this stage.

The onset of cerebral hemorrhage is sudden, the patient falling unconscious while engaged in his ordinary duties, or while under considerable increased emotional excitement which tends to raise the blood pressure beyond the restraining limits of the diseased vessel walls. The accident may result in death, or, as is the case in the majority of incidents, may produce a profound unconscious state. This state presents a rather typical picture: breathing is slow and stertorous, the skin is wet with sweat and the face somewhat cyanosed. Pupillary reactions are sluggish and the eyelids partly open. Rectal and vesical sphincters are relaxed and the limbs lie flaccid.

The comatose state may last for hours or days, death often resulting without any evidence of the patient returning to consciousness. In the cases in which recovery is to take place, the depth of the coma is gradually lessened, the patient signifying his return to consciousness by evidences of restlessness and by displaying resentment and irritability toward the examiner and those who are attending him.

Not all cerebral hemorrhages, however, result in unconsciousness of any significance, as the loss of blood may be only to such an extent as to produce mild symptoms such as attacks of dizziness or momentary loss of consciousness with mild paralysis. The weakness of the limbs may last only for a few hours to a few days, clearing up entirely or passing over into a more complete hemiplegia, the result of additional hemorrhage.

Cerebral embolism also has an abrupt onset and may produce a picture very similar to that of hemorrhage. If the amount of brain tissue involved is slight, consciousness may not be lost, while a hemiplegia may still develop.

Cerebral thrombosis may have an abrupt or insidious onset. Those that come on suddenly are very difficult to differentiate from hemorrhage. Thrombosis, however, usually results in a very gradual onset of the hemiplegia. A very common occurrence is that of the patient upon awakening in the morning discovering that he is unable to stand. This symptom may be present without any other signs. The patient may be

forewarned as to the onset of the thrombosis by experiencing pain or paresthesia in the limbs and frequently difficulty in speech.

Characteristic of a hemiplegia due to a lesion in the motor cortex or where it is more commonly found, in the internal capsule, is the fact that certain parts of the affected side escape paralysis and that those movements of a more highly specialized nature are affected to a greater degree than those which are automatic in origin. Deglutition, mastication, phonation and articulation, which have bilateral enervation, are affected only to a slight extent. In the face one may notice very little asymmetry during ordinary emotional movements. Voluntary movements, such as forced closing of the eyes, bring out the weakness on the affected side. Characteristic of upper motor neuron paralysis of the face is the fact that the forehead and eyebrows escape paralysis, due to the fact that they have cortical representation in both hemispheres. The highly specialized movements of the limbs are paralyzed to such an extent that they stand out in marked contrast to the little involvement of the automatic movements of the neck and trunk, as well as to those areas which have bilateral enervation.

The paralysis in the early stages is a flaccid one. The arm is usually more affected than the leg, the finer movements of the fingers being more affected than those of the shoulder, wrist or elbow.

Following the stage of flaccidity, a condition of increased muscle tone is assumed; the limb assumes a posture which, in the case of the arm, is a position of abduction and internal rotation of the shoulder, flexion and pronation of the elbow, and flexion of the wrist and fingers. The foot on the affected side assumes a position of equino-varus with the leg in extension. The deep reflexes in the paralyzed limbs are greatly increased and clonus may be elicited. The superficial reflexes, such as the abdominal and cremasteric, are greatly diminished or abolished and elicitation of the plantar reflex results in extension of the great toe. In the early stages of an ordinary hemiplegia there may be various degrees of hemi-anesthesia. As a rule this tends soon to disappear but may persist and may be even more troublesome than the muscular weakness.

All hemiplegic states do not confine themselves entirely to one side of the body, but, depending

upon the site of the lesion, we may have a partial hemiplegia or double hemiplegia. For example, a lesion of the mid-brain may present paralysis of the third nerve on one side associated with paralysis of the extremities and face on the opposite side. A lesion in the pons, usually due to a hemorrhage or thrombosis of one of the branches of the basilar artery, may produce a crossed hemiplegia with the face affected on one side and the hand and leg on the other. Certain lesions at the site of the decussation of the pyramidal tract may produce a paralysis of the upper extremity on one side, and of the lower extremity on the other. Again, bilateral lesions in the internal capsules or a single large lesion where the two pyramidal tracts are in close approximation, may produce a double hemiplegia, giving us the clinical picture commonly known as pseudo-bulbar palsy. In this condition, those functions which ordinarily escape paralysis, due to the bilateral enervation, are affected, producing difficulty in speech and swallowing.

Another interesting clinical entity is that which results from thrombosis of the posterior inferior cerebellar artery. This is characterized by paralysis of the soft palate and vocal cords, and conjugate deviation of the eyes on the same side as the lesion. There is a loss of coördinating control of muscle movement and swaying and lateral motion to the side of the lesion with the loss of all forms of sensation over the face on the same side and a corresponding decrease or loss of pain and temperature sensibility on the trunk and extremities opposite to the lesion. These symptoms are explainable on the fact that the vessel in question supplies the peripheral zone of the medulla in which both the superficial and deep sensory tracts are found and the nuclei of the seventh, ninth and tenth, and the vestibular portion of the eighth cranial nerves.

From an etiological standpoint, thrombosis and hemorrhage are largely due to the presence of arterial disease. Thrombosis of a cerebral vessel practically never results except from embolism or from a diseased vessel wall. Acute arteritis and subsequent thrombosis is very rare in the aged, usually occurring in acute specific fevers such as scarlet fever, diphtheria and other infectious diseases such as are usually escaped by elderly individuals. Syphilis is the most prevalent cause of subacute arteritis, the gummatous changes in the arterial walls often leading to

thrombosis. Chronic arteritis or atheromatous vessel changes are the most common etiological factors in the production of thrombosis, especially when it is accompanied by an increase in the coagulability of the blood or by a lowering of the blood pressure. Thrombosis occurring between twenty and forty years of age is nearly always the result of gummatous arteritis; in the young, the result of infection; while beyond fifty years of age, atheromatous changes are the most common cause. Gummatous and atheromatous changes have a predilection for the middle cerebral artery. This is true to such an extent that one of its branches, the lenticulo-striate artery, has been called the artery of cerebral hemorrhage.

Cerebral embolism is not especially attendant on old age; more commonly it occurs in young adults who are suffering from heart disease. An embolus, by lodging at an arterial bifurcation, results in slowing up of the circulation and the formation of a thrombus.

Cerebral hemorrhage is almost always due to the rupture of an artery. Venous bleeding is rare and is based on injury to a vessel. However, Hassin<sup>1</sup> has recently reported a case of ruptured cerebral aneurysm in which remote secondary hemorrhages were found. It is his belief that secondary hemorrhages were due to a rapid fall of the arterial tension, resulting in an extensive hyperemia of the capillaries and rupture of the venules. Because of the importance of changes in the vessel wall, hemorrhage is rare under forty years of age and becomes increasingly common thereafter.

Pathologically, thrombosis or embolism in any portion of the brain results in softening of that area supplied by the occluded vessel. In the early stages the involved area is swollen by serous exudation. The convolutions are enlarged and flattened. Within a few days after the accident, the central parts of the involved area have a cheesy to creamy milk consistency, and the zone immediately around this area appears pink, due to the escape of capillary blood into the surrounding tissue. Following this stage, the softened area shrinks, the convolutions become friable, disintegrated, and tear with difficulty from the meninges. If shrinkage does not take place, the surface of the convolutions is found hard and pitted. Other areas may undergo complete degeneration with subsequent forma-

tion of cystic cavities containing clear or slightly turbid fluid.

Hemorrhage occurs much more commonly within the substance of the brain than on its surface. The amount of extravasated blood may vary considerably. Large hemorrhages deep in the substance of the brain may break through to the surface or push their way inward and rupture into the ventricles. The loss of function in cases of very small hemorrhages is due to pressure and edema, rather than to actual destruction of the nervous elements. In the early stages, the hemorrhagic area is represented by a red clot which is easily separated from the brain substance. Later on the clots shrink and there is evidence of degeneration of the brain around the area. Degeneration goes on to completion and scar tissue or a cystic cavity remains.

Cerebral aneurysm is a rather rare occurrence. Although found in young individuals where it is due to developmental abnormalities or infection, it is more commonly found in the aged, the result of arteriosclerotic or atheromatous degeneration of the media with subsequent weakening of the wall and bulging. Parker<sup>2</sup> has pointed out that syphilis probably plays only a small part in the formation of intracranial aneurysm, because the pathological change is usually that of an obliterative endarteritis and instead of dilatation of the vessel there is thrombosis and stoppage of the circulation.

The symptoms of aneurysm depend first upon its size, second its location, and thirdly whether or not there has been leakage or rupture. Small aneurysms and even larger ones in certain locations are often found at necropsy, having given no symptoms during life. Others, though small, may be so situated as to press against one or more of the cranial nerves, thus producing paralysis or irritative phenomena. In addition to focal signs, evidences of generalized increased intracranial pressure such as choked disc, headache and vomiting may be present, leading to a diagnosis of tumor and operative interference. The diagnosis of an unruptured aneurysm during life is a very difficult one to make. In the presence of focal signs pointing to areas adjacent to the larger vessels or their branches, and evidence of vascular disease or abnormalities in other portions of the body, the presence of an aneurysm may be suspected but an exact diagnosis is impossible. Those that rupture invariably cause

death and are discovered by the pathologist. In the cases in which leakage occurs with hemorrhagic spinal fluid and signs of meningeal irritation, a more exact diagnosis may be made, especially if there is a history of previous accident of a like nature.

A very important group, because of their relative frequency, are those cases in which outstanding accidental features are lacking, but whose findings are based on generalized vascular disease producing irritative and slowly degenerative lesions with a gradual loss of function. The symptoms in these cases can be partly ascribed to cerebral arteriosclerosis and partly to vascular changes within the spinal cord.

The most common complaint of this group of patients is that of vertigo. The next frequent complaint is that of tinnitus, while many of these patients display a gradual impairment of hearing. In analyzing 1,026 cases, Stein<sup>3</sup> found that in a large majority of arteriosclerotic patients, ear conditions overshadow pathological conditions elsewhere. Headache, or, as many patients describe it, pain in the head, is a common symptom. Approximately 30 per cent of these cases will present pupillary changes characteristic of senility. Arcus senilis is present and the pupils are small and sluggish. Ophthalmoscopic examination in many cases will reveal evidence of retinal arteriosclerosis. This condition is characterized by a narrowing of the arteries and a dilatation of the veins. The calibre of the arteries is irregular, due to the patchy thickening of the intima. The veins may show constriction where they are crossed by the rigid arteries. The arteries present a so-called silver wire appearance due to an increased luminosity of the light streak. There seems to be some variance of opinion in the literature at the present time as to the value of retinal arteriosclerosis as an indicator of cerebro-vascular disease. However, the majority of investigators still believe that retinal arteriosclerosis is a good index of the condition of the cerebral vessels. Knapp<sup>4</sup> believes that considerable changes in the retinal vessels are indicative of a like change in the cerebral vessels, but that the reverse is not necessarily true. Moore<sup>5</sup> reports a series of sixty-six patients in which he found that 44 per cent developed conditions due to cerebro-vascular accident, such as hemorrhage or thrombosis, within a period of seven years following the time when evidence of considerable

change in the retinal vessels was first discovered. Burch<sup>6</sup> states that when several signs of arteriosclerosis of the retinal vessels are present and considered with other physical findings, they contribute information valuable in both diagnosis and prognosis.

Epileptiform attacks occur in about 10 per cent of these patients. These may last over many years and are not necessarily of bad prognostic significance as regards life. They are usually general in nature and only occasionally of the Jacksonian type.

A considerable number of these cases will show evidence of intellectual deterioration, presenting a loss of memory for recent events, with gradual impairment of attention and comprehension. Emotionalism, evidenced by periods of depression, excitability or euphoria, is a not infrequent occurrence. Many of these patients develop a definite psychosis classed and diagnosed variously as presenile psychosis, arteriosclerotic insanity, senile dementia and other descriptive terms of a like nature.

The mental changes in this group are characterized by impairment of attention and comprehension, resulting in faulty impressions and memory failure for events which have happened since the onset of the disease. Their judgment becomes impaired and they are unable to carry on their work as formerly. As the condition progresses, they often become careless in their habits, the amnesia becomes more marked and their mental horizon narrow. Delusions of persecution and infidelity may be developed, and visual and auditory hallucinations are often found. Along with the mental picture various physical symptoms develop. The gait is tottering, there is a tremor of the hands, incontinence, ataxia, and various degrees of paralysis.

Disturbance of function due to vascular changes in the spinal cord are quite common. Too little importance has been ascribed to this condition which is seen frequently enough in the aged to make it necessary that it should be care-

fully considered in dealing with a spinal cord syndrome. Hemorrhage, thrombosis and embolism may occur in spinal cord vessels acutely; but the findings are usually due to a gradual degeneration of the nervous elements associated with slowly developing vessel change.

The most frequent symptom in this group of patients is that of gait disturbances. The gait is more frequently ataxic than spastic, but a combined spastic and ataxic gait is often found. A hesitating or stammering gait is a very common finding. The gait disturbance in many of these patients may be due to vertigo, or to a combination of vertigo and spinal cord changes or to spinal cord changes alone. Paresthesias of the hands and feet and pain in the extremities, sometimes lightning-like in character, may have their origin in spinal arteriosclerosis.

Vesical and rectal disturbances are common occurrences. The reflexes may be markedly increased with clonus or may be diminished or absent, depending on the extent and location of the damaged area. Impairment of superficial and deep sensibility may be present as well as extreme muscular weakness. Many of these cases are erroneously diagnosed as tabes dorsalis, tumor of the cord, combined column disease and various other spinal cord conditions.

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## PROGRESS IN THE PREVENTION AND TREATMENT OF SOME INFECTIOUS DISEASES\*

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INTEREST in preventive medicine has taken such a firm hold on the medical profession and the laity that nearly every community is now taking steps toward the stamping out of infectious disease. Newer developments in this field have in a measure at least been responsible for so widespread an interest. It is the purpose of this paper to summarize briefly the practical value and application of some of the procedures which have been introduced for the prevention, diagnosis and treatment of these diseases.

### DIPHTHERIA

The benefits of diphtheria antitoxin are too well known to require discussion. Certain adjuncts in the treatment of diphtheria and its complications have, however, been of interest. Serious cardiac complications occurring in the course of the disease have been treated with some degree of success. The therapeutic effectiveness of digitalis, adrenalin and pituitary extract in animals have been shown by Edmunds and Cooper to be greatly augmented by the intravenous administration of hypertonic glucose solution. The practical value of this procedure combined with the usual measures instituted in these cases in our experience has proved the truth of many of their statements.

In the treatment of laryngeal diphtheria there are two measures which have been of particular interest to the authors, namely, the use of laryngeal suction and intraperitoneal administration of antitoxin. Suction was introduced as a method of removing laryngeal membrane. This is carried out by the use of a laryngoscope through which a plain semi-soft or metal catheter is introduced, the distal portion of which is attached to a suction machine. Over a two year period the incidence of intubation was reduced approximately to one-half by this method, which is comparatively simple after reasonable practice with the laryngoscope has been experienced. The accompanying figures illustrate diagrammatically how the procedure is carried out.

Intraperitoneal use of antitoxin has proved of value in selected cases of diphtheria. Tests carried out by one of us to determine the rapidity of absorption of antitoxin by various routes showed this method to be second only to the intravenous and that sufficient antitoxin was found to be present in the blood one hour after intraperitoneal injection to neutralize all the circulating toxin in the very worst case of diphtheria. The simplicity of technic and avoidance of sudden general reactions associated with dyspnea makes the method of particular choice in the more advanced forms of laryngeal diphtheria.

*Prophylaxis—Schick test and toxin antitoxin.*—The reliability of the Schick test as an indicator of immunity is now definitely established and from observations extending over a number of years has determined the following facts:

1. That most new-born infants have an immunity which diminishes after six to nine months.
2. Most children from this age up to school age have little or no immunity.
3. About one-third of the school children in the larger cities and two-thirds of those in rural communities have enough immunity for protection.
4. About four-fifths of the adult urban population have an appreciable amount of immunity, whereas only about one-half of those in rural communities have this.
5. The antitoxic immunity following an attack of diphtheria depends entirely upon the individual responsiveness to the toxic stimulus. Many develop no immunity or at best only a transitory immunity and for this reason Schick tests should be done from two to three months after an attack.

*Toxin Antitoxin.*—The preparation of diphtheria toxin slightly under-neutralized by antitoxin from horse or goat has been most widely used in this country, particularly Park's formula 0.1 L +. Results on several hundred thousand children inoculated with this preparation indicate that about 90 per cent receive an immunity following three inoculations which lasts from

\*Read before the annual meeting of the Northern Minnesota Medical Association, St. Cloud, Minnesota, Sept. 12 and 13, 1927, and before the Lymanhurst Staff.

several years to possibly a lifetime. Ramon of Paris introduced a toxin treated with formaldehyde which has now been used quite extensively and seems to be effective. This preparation called anatoxin has the advantage of containing no sensitizing serum protein. Another modification has been used by Larson of the University of Minnesota in which the toxin is detoxified with sodium ricinoleate, the effectiveness of which, while promising, must await further observations. The Schick test is extremely important for physicians to carry out six months after immunization has been induced.

#### SCARLET FEVER

Since the epoch-making work of the Dicks, scarlet fever toxin has been employed in an endeavor to accomplish permanent immunization to scarlet fever, repeating a procedure similar to Gabritschewsky's in 1905. The scarlet fever committee has recommended the use of five injections of 500, 1,500, 5,000, 15,000 and 20,000 skin test doses of toxin at intervals of a week as a minimum. This procedure has proved effective in a large number of cases in rendering a positive Dick test negative. The naked scarlet fever toxin is so extremely potent, however, that this procedure frequently produces severe reactions and for this reason many physicians have felt the necessity of its discontinuance. Larson's preparation of scarlet fever toxin mixed with castor oil soap has now been given to a large number of children in the Northwest. As large a dose as 3,000 skin test units detoxified in this manner may be safely injected at one time with practically no general systemic effects. The Dick test has been found to be negative in a comparatively large percentage of these cases to date but the work is still in progress and the cases have not been observed over a sufficiently long period of time to justify any definite conclusions. It is true that certain of these children have developed scarlet fever. This, however, should not cause us to prematurely feel that attempts to immunize against the disease have failed. We now have evidence that the organism causing scarlet fever appears to be of two different strains with respect to fermentation of mannite, and the accumulation of further knowledge may reveal that more complete immunization may be accomplished by using a polyvalent

material from organisms at present not identified, in addition to that from the strains isolated to date. Even when this is accomplished scarlet fever immunization undoubtedly, like diphtheria immunization, will not prove effective in one hundred per cent of cases. The results obtained from inoculating 13,000 children in Minneapo-

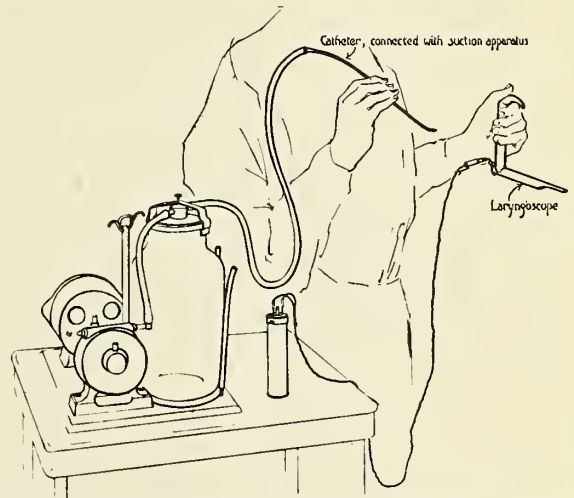


Fig. 1. Apparatus for suction treatment or laryngeal diphtheria.

lis are very encouraging. According to the records of the Health Department during a nine month period extending from November 1, 1926, to June 19, 1927, in about 92,000 non-vaccinated children one in every forty-seven contracted scarlet fever. Among the 13,000 who were vaccinated during this same period only one case occurred in every 650 children. In the non-vaccinated group therefore the disease was about fourteen times as frequent as in the vaccinated group. Somewhat similar results have been obtained in Cleveland in a group of about 2,000 children.

In conclusion it can be said that the accomplishments of scientific investigation include the identification of a toxin producing hemolytic streptococcus as the cause of scarlet fever. This toxin has lately been employed for immunizing purposes both in its naked form and when detoxified by means of castor oil soap with encouraging results. Physicians therefore are now in a position to attempt to immunize their clientele against this disease but for the present should explain to their patients that to date the certainty that the individual will be immunized and the duration of the immunity is not fully established. Patients should understand that

while the records indicate that many will be given a varying degree of immunity they should not be disappointed if the inoculations should fail in a certain percentage of cases. From our own observations on the Dick test during the past three years it would appear advisable to administer three injections of at least 3,000 skin test doses each at seven day intervals and to give one injection of 3,000 to 5,000 doses at the end of twelve months to prolong or reestablish immunity.

*Antitoxin.*—The therapeutic value of scarlet fever antitoxin was studied by one of us in a series of two hundred cases. The commercial preparations used were apparently specific and caused rapid blanching of positive Dick tests.

Acceleration in clinical improvement, as gaged by temperature, rash and symptoms, was quite definite in one hundred receiving antitoxin, particularly in those to whom antitoxin was administered early.

When given early, the serum has a beneficial effect on the toxemia and seems also to reduce the number of complications, although no effect on septic processes is noticeable. Small prophylactic doses of serum in this group did not prevent later infection with scarlet fever.

Serum sickness in one-fourth of the cases was an annoying factor and in one-tenth of the cases it was extremely discomforting to the patient, especially in those who had previously been sensitized to horse serum through diphtheria immunization.

#### TUBERCULOSIS

During the past twenty years methods of diagnosis and treatment have undergone considerable change. The von Pirquet test remains today of value in detecting those individuals who have been infected by the tubercle bacillus some time in the past. Recently one of us has modified the technic of applying the von Pirquet test and feel that it has certain advantages. The modification involves making a single puncture with an ordinary needle, penetrating the epidermis through a drop of tuberculin placed upon the skin. This method is equally or even more sensitive than the usual scarification or scratch method of performing the von Pirquet, is less objectionable to the child, and has the further advantage that the tuberculin may be wiped off

immediately after performing the test without altering its effectiveness.

In the treatment of tuberculosis, Gerstenberger has reported excellent results in treating young children having parenchymal pulmonary tuberculosis and cavities with ultra-violet rays. The authors have recently employed artificial pneumothorax in an infant five months of age who had an extensive unilateral pulmonary tuberculosis. Since instituting artificial pneumothorax this infant has made a remarkable change from what seemed impending death when first attempted, to a normal, fat, temperature- and symptom-free infant at the age of nine months. This demonstrated that artificial pneumothorax has a place in the therapy of pulmonary tuberculosis in infancy as in the adult.

The possibility of vaccinating the new-born, especially as the result of the work of Calmette and Guerm, has recently attracted attention. Since July, 1924, over forty thousand children in France, Belgium, Greece and Indo China have been vaccinated by the administration of the Bacillus Calmette Guerm B. C. G.: a vaccine of living tubercle bacilli of bovine origin, rendered avirulent for all animals by 230 passages of bovine bile medium. This may open a new era in the eradication of tuberculosis but for the present the procedure probably should not be employed too enthusiastically or on too large a scale until its value is more firmly established. Vaccination to create an absolute immunity against infection by the tubercle bacillus undoubtedly can never be accomplished. A relative immunity, however, which enables one to withstand small infection apparently can be accomplished. Petroff feels it is safer to accomplish this with dead tubercle bacilli rather than with living avirulent B. C. G. Petroff believes that dead tubercle bacilli or some of their derivatives can be used safely and effectively in immunizing the human race.

#### ERYSIPELAS

For years the treatment of erysipelas has been empirical and symptomatic. Recently one of us has made a study of the therapeutic value of roentgen ray and serum therapy in this disease. Observations were made on 155 cases of erysipelas, of which 35 controls were treated with local application, 80 with roentgen irradiation.

tion, 30 with erysipelas antitoxin and 10 with *x*-ray and antitoxin combined.

The efficacy of the *x*-ray therapy is demonstrated by the very prompt return to normal temperature (1.5 days in irradiated groups, as

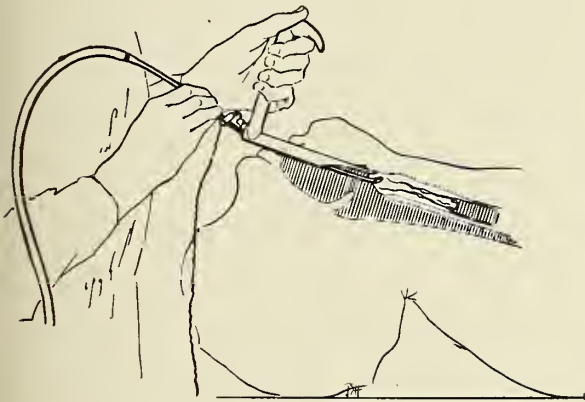


Fig. 2. Laryngoscope in place.

compared with 3.4 days in the controls), and more rapid disappearance of symptoms such as pain, toxemia and general malaise (two days in the *x*-ray groups as compared with eight days in the controls).

Extension of the disease occurred less frequently in the irradiated group (21 per cent) than in the controls (68 per cent). Such extensions as did occur in the former group were usually slow in progress, slight in extent and often developed as isolated areas not in contiguity with the original diseased area.

The mortality in the *x*-ray group (6 per cent) was only one-fourth of that (23 per cent) in the control group, in spite of the fact that the former included more infants than the controls.

Erysipelas antitoxin reflected its value by the return to normal temperature and subsidence of symptoms in 2.2 and 3.8 days respectively, as compared with 3.4 and 8 days respectively required for the control group.

There was less tendency of the disease to spread in cases treated with serum (46 per cent) than in those treated by local applications (68 per cent).

The mortality among the patients receiving

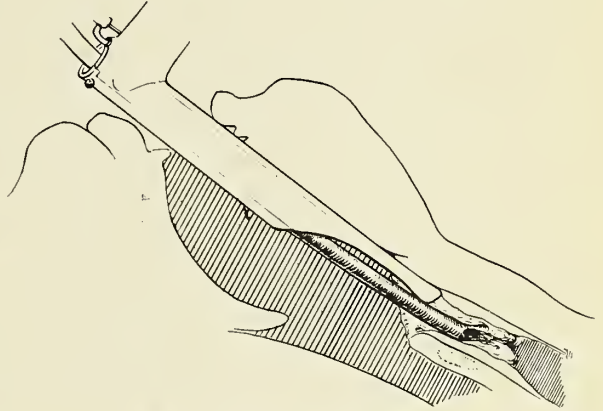


Fig. 3. Removal of membrane.

erysipelas antitoxin (6 per cent) was about one-fourth that recorded for the controls.

Our observations indicate that antitoxin and roentgen irradiation are both of definite value in the treatment of erysipelas. The *x*-ray seems to be especially effective in inhibiting a spread of the disease and also in bringing about a prompt subsidence of temperature and alleviation of symptoms.

Successful results following the use of antitoxin and *x*-ray combined, in ten cases in which the prognosis was considered especially grave from point of view of age of the patient and extent and severity of the disease, indicate that the best form of treatment available at the present time includes the intravenous, intraperitoneal or intramuscular administration of erysipelas antitoxin in adequate dosage, in addition to a proper (large) roentgen irradiation of the involved area and the contiguous normal skin.

## THE EARLY DIAGNOSIS OF PULMONARY TUBERCULOSIS

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THE chain of thought which will lead a physician to the successful early diagnosis of pulmonary tuberculosis must resemble the firmly fixed chain by which Aristæus held Proteus when he changed in rapid succession into fire, flood, and a horrible wild beast. The links of the chain are composed of the constant thought "tuberculosis" no matter what protean sign or symptom the patient presents. In the case of practically every disease the physician must consider the possibility of tuberculosis. He should expect to be able to make an exact diagnosis of tuberculosis in at least two per cent of his clientele. Easy exhaustion, digestive disturbances, headaches, nervous irritability, insomnia, fever which at times may resemble typhoid, tachycardia, malaise, anemia, weight loss, pain in the chest, local and general sweats, frequent throat clearing, fistulæ, blood spitting, susceptibility to colds, dry or productive cough, disorders of menstruation are some of the symptoms and signs which call for most careful investigation for pulmonary disease. The most important part of the study of each patient is the careful taking of the history. The next most important step is the close scrutiny of the patient by the trained eye of the clinician. It is a stigma on the medical profession that lay people who have been closely associated with the tuberculous, as in a health resort, can recognize a consumptive type long before many physicians can make an exact diagnosis. The toxin of the disease creates objective and subjective signs such as wasting of the neck muscles, flushed cheeks, glistening eyes, a delicate appearance, easy fatigue, temperamental disturbance and even a weakened voice; any of which should arouse suspicions of tuberculosis. On the other hand, advanced tuberculosis may be present in some people with absence of all such symptoms.

*Physical Examination.*—Inspection will reveal a lagging of one or both lung apices.

Palpation enables a confirmation of possible lagging, determines the excursion of the chest wall, detects the increased or decreased vocal resonance, the position of the heart apex beat,

which may be changed by a diseased lung, and the position of the trachea, whether misplaced to right or left. Percussion is valuable in detecting impaired resonance at the lung apex, and percussion with the tips of all five fingers, as advocated by Auenbrugger, who introduced the art, is very valuable over the bases of the lungs to bring out basal lesions, thickened pleura or pleurisy.

Auscultation is probably the most important means of investigation. Changes of the breath sounds such as prolonged, high-pitched expiration, quiet breathing and râles are to be noted. It is best to begin auscultation by placing the stethoscope in the lower axilla, and moving the bell upward after each expiration. To determine the presence of râles the patient should be instructed to breathe in through the mouth, then to breathe out and to give a slight cough with the last part of the outgoing breath. Râles are apt to be heard in showers, and usually occur after the cough at the time the breath is inspired. They should especially be sought at the apices posteriorly and above and below the clavicles. It must be remembered that occasionally the residual fractions of the broncho-pneumonias of influenza may for a while give rise to a shower of râles similar to tubercle.

*X-ray Examination.*—The *x-ray* films should always be inspected by the clinician. Special technic is needed to produce proper *x-ray* pictures of the chest and it is a serious matter that so many poor films are taken. The *x-ray* may indicate that tuberculous lesions found on physical examination are actually more extensive or at times less extensive. Areas of tubercle deposits are frequently found in healthy people at the roots of the lungs. The films should be carefully inspected for tubercle lesions in the parenchyma of the lungs.

Fluoroscopic study is of value in noting the lung aeration and the excursion of the diaphragm. Early diagnosis rarely can be made by the fluoroscope and, generally speaking, film study is the more essential.

*Laboratory Examinations.*—Specimens of spu-

ta should be taken and sent to a reliable laboratory. At times many specimens are necessary before a positive diagnosis can be made. Patients often relate that, suspecting their own condition in spite of negative finding by their physicians, they have of their own accord sent sputa to public laboratories and the correct diagnoses have been made. There are no reliable blood tests for the detection of tuberculosis. An increase in the white cell count and a decrease, or at times increase, in the total lymphocyte element are at times suggestive.

*Temperature Study.*—Any person suspected of pulmonary tuberculosis should be put to bed for at least a week and the temperature and pulse carefully studied. One or two temperature observations at the time of office visits are most unreliable. An afternoon or evening temperature of 99 or over needs explanation. The resting pulse should be normal in a healthy person. In patients with tuberculosis it is almost always accelerated.

*Tuberculin Tests.*—The skin tuberculin tests have no value in the diagnosis of adult tuberculosis. The subcutaneous test can be dangerous and should be used by experts only.

*Differential Diagnosis.*—Almost any disease, from hookworm to aneurysm, may suggest tuberculosis. Repeated negative sputum findings should always lead to a careful search for bronchitis or bronchiectasis associated with infection of the nasal accessory sinuses. In such cases the rule should be to order *x*-ray pictures of the sinuses. Lung abscess and rare chest diseases

such as aspergillosis, streptothricosis and even syphilis are conditions the tuberculosis specialists are constantly watching for. Thyrotoxicosis is a condition which may resemble tuberculosis, especially in weight loss and in fever and pulse variations. A definite increase found in the metabolic rate determines the diagnosis in favor of hyperthyroidism. Possibly the greatest difficulty in differential diagnosis is found among patients in whom occult tuberculosis is suspected. They may have no cough and present no physical signs, and parenchymatous lesions of the lungs are not detected by the *x*-ray. In these people, most frequently women, a daily elevation of temperature is noted and also an accelerated pulse. A careful investigation must be made in regard to the thyroid gland, tonsils, teeth, gall bladder and pelvic organs before a diagnosis of occult tuberculosis is made. Tonsils should not be removed, especially in adults, unless a very careful study of the chest has been made.

The early diagnosis of pulmonary tuberculosis would be more often made if physicians would keep uppermost in their minds the frequency of the disease and their responsibility to be constantly alert to the possibility of tuberculosis in so many maladies for which they are consulted.

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Editor's Note: The above article is one of a number which are appearing in medical journals throughout the country in connection with a nation-wide campaign being launched in March by the National Tuberculosis Association for the early diagnosis of tuberculosis. In addition to calling the attention of the medical profession to the importance of early diagnosis the attention of the public will be directed to the early symptoms of tuberculosis by means of pamphlets to be distributed by state and county tuberculosis societies, billboard posters and moving picture reels. The campaign will be financed by the income afforded by the sale of Christmas seals.

## REPORT OF INSPECTIONS OF SCHOOLS OF CHIROPRACTIC AND NATUROPATHY IN THE UNITED STATES\*

**P**ERSONAL inspections have recently been made of all schools existing in the United States for the teaching of particular methods of treating human diseases. While a complete report of all information secured would hardly be justified, a brief résumé of conditions found in schools of chiropractic and naturopathy will be of interest to both physicians and laymen.

### SCHOOLS OF CHIROPRACTIC

Chiropractic is said to have originated in 1895 with D. D. Palmer, a magnetic healer of Davenport, Iowa, and to have been "developed" by his son B. J. It is in reality the older osteopathic concept very slightly modified and renamed. It was the enlarging of the osteopathic field and the lengthening of the osteopathic curriculum that gave chiropractic its opportunity, and the latter's rapid development has been due largely to the fact that it offered a short-cut to osteopathy.

According to this theory disease is due to vertebral subluxations which cause a pinching of spinal nerves between bones. This pinching interferes with the flow of "Innate Intelligence" or vital energy to the body tissues. The spinal "adjustment" alone renews that flow and restores health.

Chiropractic has had, during its brief career of thirty-two years, about one hundred and fifty schools. Forty of these are still active, many of them offering courses at night only and having a mere handful of students; more than half of the forty are so poorly housed and so inadequately financed that their future is problematic. B. J. Palmer, the "developer" of the cult, recently said: "According to our records, forty-eight chiropractic schools have closed their doors during the past two years."<sup>1</sup>

An entrance requirement of four years of high school study or its equivalent is claimed by the best of these forty schools; it is probable, however, that not one of them is enforcing the re-

quirement. Mature age, business experience, ability to carry the chiropractic courses, or any convenient achievement is declared to be a satisfactory equivalent. A few schools give ridiculously short and easy high school quiz courses and certificates, for which a special tuition fee is charged; this course in one of the best chiropractic schools<sup>2</sup> occupies two evenings weekly for six months. But fifty per cent or more of these schools do not even claim to require a high school education.

The courses offered in the majority of these schools run through "three school-years of six months each." They are poorly chosen, poorly arranged, and very poorly outlined. The student may begin on any school day of the year and finish on the same day of the eighteenth month thereafter. There are no adequate records of amount or quality of work done. Going to school is a matter of "doing time," and the student is given his doctor's degree as soon as the time limit expires. Legislation has forced a few schools to lengthen their courses to twenty-four or twenty-seven months. When this is done, the school usually shortens its working day to three or four hours as compensation, and holds out to the student his ability to spend the remainder of his time earning his expenses. Also, in almost any twenty-four or twenty-seven month school, a student may graduate at the end of eighteen months if he declares his intention to practice in a state requiring only that amount of study. A few schools require less than eighteen months, and one of the most widely known gives only a home-study course that may be finished within three months.

The equipment invariably found in these schools consists of a few adjusting tables, students' chairs, and desks. Some have turned to physical therapy or naturopathy and installed a varying amount of electrical apparatus. A very few have x-ray machines, used (except in one instance<sup>3</sup>) in "spinography." About eight of the forty schools have small chemistry laboratories, with equipment for the very simplest experi-

\*Inspections were made during the summer and fall of 1927, by representatives of the Council on Medical Education and Hospitals of the American Medical Association. The schools included in these inspections are the schools of chiropody, chiropractic, naturopathy, optometry, osteopathy and physical therapy, as well as a large number of miscellaneous institutions.

<sup>1</sup>Article: "The Great Undertow."

<sup>2</sup>National College of Chiropractic, Chicago.

<sup>3</sup>The Pasadena College of Chiropractic reports that its students are taught x-ray therapeutics.

ments only. Two or three have dissection laboratories. None of the forty schools have laboratories for physics, physiology, physiological chemistry, bacteriology, histology, embryology, or pathology. Courses in these important laboratory subjects are either given by the didactic method or omitted altogether.

*The clinics* are not adequate for training in the recognition of even the most common disease. There is no adequate apparatus for the diagnosis of such diseases. The treatment procedures taught and practised do not include the therapeutic measures of demonstrated value, and so the patient is left practically without either diagnosis or treatment. There are no hospitals to which patients in need of hospitalization are referred, and none in which students may study the progress of cases.

*The faculties* of these forty schools are made up of men of very poor educational qualifications. While a very few are both educated and shrewd, and an occasional doctor of osteopathy or even of medicine may be found among them, the great majority are not trained in any of the "medical sciences," the non-medical sciences, or the liberal arts. They are frankly out of sympathy with the organized medical and public health interests, and are openly antagonistic to many of the most universally recognized facts and procedures of civilized life.<sup>4</sup> They circulate, by word of mouth and through the school literature, greatly misleading statements about the chiropractic "profession," ambiguous testimonials concerning the cure of incurables, and wild claims about the schools themselves which a most superficial investigation proves to be without foundation in fact.<sup>5</sup>

#### SCHOOLS OF NATUROPATHY

While a venerable old age is claimed for naturopathy, its development has really been more recent than that of chiropractic; its chief exponent, Benedict Lust of New York, claims that

he organized the "parent school" in 1896, but even so ancient an origin as that is improbable.

The cult seems to have no basic idea but to be rather a nature-cure hodge-podge with a decided antipathy to drugs. In fact, naturopathy has developed in part as an effort to broaden the scope of chiropractic. There are about five schools of naturopathy and all of them teach chiropractic. Several of the chiropractic schools teach naturopathy. Probably fifty or even seventy-five per cent of the practicing naturopaths have been recruited from the ranks of chiropractic, and the two cults have always been on the friendliest terms.<sup>6</sup>

*Entrance requirements* are said to include four years of high school study or its equivalent, but none of the schools of naturopathy really enforce this rule. Records are not kept; the student's word is taken in the matter, and if he is so thoughtless as to confess that he lacks the high school requirement the matter is either forgotten or patched up with as little embarrassment as possible. One school offers a night course in which the deficiency may be made up (extra tuition being charged for this service), but admits that the requirement has never been enforced.

The courses run through twenty-four or thirty-six months, with a short school day and an evident carelessness regarding attendance. It is probable that only one school has day-classes. These institutions show a marked tendency to have students attending two or more "schools" simultaneously. One school, for example, which claims to operate under about twenty different names, offers "a liberal reduction to students taking four or more courses (schools) at the same time." Another tried to enroll the inspector in two "schools" at once when fifty per cent of the sessions of one conflicted with the sessions of the other. One school counts attendance in each class twice—once for naturopathy and once for chiropractic—and so claims to pile up 6,000 class-hours (thirty-minute periods) of study, thus "qualifying" under the new Florida law; this school gives every student two diplomas, and many students three or more, each diploma bearing a different name for the school. No outline of the courses offered is published by any of the schools of naturopathy.

<sup>4</sup>For example: vaccination, typhoid immunization, specific medication, diphtheria antitoxin, quarantine, focal infection, germ theory of disease, etc., etc.

<sup>5</sup>Thirteen of these schools have made affidavits to the American College of Chiropractors that the curriculum includes 3,528 forty-five-minute hours of work, and on the basis of these affidavits have been rated by this "college" as "class A schools" and awarded "diplomas of honor." Allowing for ten-minute intervals between classes and five school days per week (considering that not a single holiday is allowed during the eighteen months of the course), this schedule would require more than eight hours of actual attendance daily, a program which no school of any nature would attempt to follow. The American College of Chiropractors admits that none of these schools were inspected prior to their being rated and that none of their claims have been investigated since.

<sup>6</sup>The chiropractor may easily become a naturopath by taking a three-month "post-graduate" course in one of the naturopathic schools.

*The subjects* include sysmotherapy, gluco-kinesis, zone therapy, physicultopathy, astrological diagnosis, practical sphincterology, phrenological physiology, spectrochrome therapy, iridiagnosis, chiropractic, diet, hydrotherapy, osteopathy, physiotherapy, electrotherapy, mechanotherapy, heliotherapy, tension-therapy, naprapathy, neuropathy, physical culture, and many others.

The equipment in these schools differs little (if at all) from that found in schools of chiropractic, except that a small amount of electrical apparatus is usually found, and adjusting tables are not quite so much in evidence. A small chemistry laboratory is usual; that of the "parent school" in New York has room for two or possibly three students, but has not sufficient equipment for so large a number to perform the same experiments at the same time. There are no laboratories for physics, physiology, physiological chemistry, anatomy, bacteriology, histology, embryology, or pathology.

*The clinics* are even less adequate than those of the chiropractic schools. No school of naturopathy has a hospital associated. The therapeutic procedures include chiropractic, osteopathy, hydrotherapy, electrotherapy, diet, and a wide range of so-called "natural methods."

*The faculties* of these schools are composed of untrained men, many of whom have been recruited from the schools of chiropractic. Their educational qualifications are so like those of teachers of chiropractic that no further statement is necessary. That such instructors should train students in the proper use of so wide a variety of therapeutic measures, and do it within the short time allotted, is obviously impossible.

#### GENERAL DISCUSSION

In such a brief report many matters of interest must be entirely omitted and many others no more than mentioned; elaboration, though a constant temptation, is one which brevity forbids. But to one who is familiar with the elaborate equipment and curriculum found necessary to proper training in the science and art of healing today, the most impressive thing about these naturopathic and chiropractic schools is not what they are, but what they are not. A few statements from this point of view will properly close the report itself and also form an appropriate prelude to the list of schools following.

1. Of the fifty active schools listed, a few are mere "branches" rather than separately existing institutions, and these fifty constitute less than one-third of the number formerly existing.

2. All but a mere handful of these fifty existing schools are so poorly housed and so inadequately financed that their continuation is problematic.

3. Very few of these schools have even one adequately trained teacher on the faculty, and there are probably less than five expert all-time teachers in the entire lot of fifty institutions.

4. Not one of these schools actually enforces a matriculation requirement of even five minutes of high school study.

5. Not one of the fifty schools gives so much as one worthy laboratory course or has one worthily equipped laboratory.

6. Not one of these schools conducts a clinic in which a wide variety of the common diseases may be studied.

7. There is not one clinic equipped with the trained personnel or the scientific apparatus for the clinical diagnosis of a variety of the common diseases, nor having a laboratory equipped for checking such clinical diagnoses.

8. There is not one clinic equipped for the proper treatment of patients suffering from such diseases.

9. There is not one of these schools whose students or whose faculty may enjoy the privilege of practice or even of observation in any worthy hospital.

10. There is not one of these schools that does not proceed on the basis of unproved theory, ignoring the lack of endorsement by all worthy educational institutions.

11. There is not one of these schools that does not ignore or even avowedly oppose the scientific point of view and the facts of medical science accepted by the authorities of the entire civilized world.

12. There is not one of these schools that does not owe its existence to the fact that it offers a short-cut to the practice of medicine.

#### INSPECTION REPORTS

*Minnesota Chiropractic College.*—Inspected Sept. 12, 1927. This school is located at 70 Willow St., Minneapolis, and is conducted by Dr. Robert Ramsey, a graduate of the National School of Chiropractic and of the Chicago College of Ophthalmology (!). It was chartered in 1912, and has probably seen more pros-

perous days than the present. Ramsey is a good salesman and seems to be enjoying a good private practice, but his principal teaching interest has now changed from chiropractic to naturopathy and he has only a small number of students studying either (or both). For this reason (probably), he has very recently started a class in laboratory technic; he claims an enrollment of sixty girls in this class—probably a gross exaggeration.

The buildings consist of two stucco residences which have been rearranged, one for the school and one for the "Ramsey Hospital." An enclosed passage-way has been built from one to the other. The first floor of each is adapted more to a physical therapy clinic than to anything else; on the school side there are small treating booths, a front office, two small class rooms of which one contains ten students' chairs and one twenty, and (in the rear) a chemical laboratory into which twenty-five students might be crowded, but almost bare of equipment; on the hospital side are more treating booths and a front office. In the enclosed passage-way are kept eight or ten pathological specimens, half of which are human embryos; Dr. Ramsey proudly pointed to these embryos, fondly displaying one specimen two centimeters in diameter with an oblong central figure; "That's the placenta," he said, "and this is the baby—twenty days old—not a doctor in the city has another like it!" When asked how many patients were usually in the hospital, he replied, "Anywhere from six to sixteen."

The buildings are two-and-a-half stories high, but the inspector was shown only the first floor. Several treating booths had patients in them. The booths shown were equipped with treating table and chair and some piece of therapeutic apparatus, usually a light or an electric generator. One dark-heat cabinet was shown, with a bath tub in the same room. An "ozone inhalation" machine, able to accommodate four patients at a time, was demonstrated. "This," said Dr. Ramsey, "sterilizes the entire blood stream."

Twenty-two students are said to have been graduated this year; about twenty-two are said to have remained in the school, and the fall class enters today; one new student, according to Ramsey, signed up today (the day of the inspection). Dr. Ramsey's way of reporting numbers destroys confidence in him. His school is probably much smaller than he indicated. One student was seen (probably the one who had just been signed up), but there were no others about, in spite of the fact that the courses were just beginning. This one student did not know what hour the courses were supposed to start, and he seemed to be hanging around with nothing to do and no one giving him the slightest attention.

The course for either chiropractic or naturopathy is said to run through twenty-four months; the combined course may be finished in about thirty months. The tuition for either course is \$600, and that for the combined course is \$1,000. High school graduation is said to be required. It was stated by Dr. Melvin Gates, a naturopath and physiotherapist of Minneapolis, that Dr. Ramsey had recently been found to have misappropriated funds of the naturopathic association

and also to have sold at least two naturopathic diplomas. The naturopaths are now encouraging young men to start the practice of naturopathy in Minnesota, either with or without educational qualification, with the expectation that they will be legalized and licensed without examination within two years.

Dr. Ramsey stated that when the college was running full-force (?) there were fourteen on the faculty, but just now about four besides himself were doing all the teaching. No instructors except Dr. Ramsey were seen, and it was the day on which the work of the year was to begin.

*Professional Assistants' Training School.*—Inspected Sept. 12, 1927. This school is the old Lincoln Chiropractic College, but with such a change of both name and work that it is almost unrecognizable. It has used many addresses, all in Minneapolis. 803 Hennepin Avenue and 17 S. Eighth St. are the two entrances to the Walker Building, in which the school once occupied rooms 217 and 219. 1500-1502 and 1417 E. Franklin St. are the addresses of the old Ortho-Chiropractic College of which Ernest Du Val was dean, and which combined with the Lincoln Chiropractic College at a time when the two schools are said to have had "only one student between them"; the combined school moved from 1417 E. Franklin St. to 1600 Harmon Place last March. At the latter address the school continued to offer a chiropractic course, as it does at present, in the name of Lincoln Chiropractic College, but it displayed the name of Professional Assistants' Training School and began to turn its chief attention to a course in physiotherapy with the offer of both physiotherapy and naturopathy diplomas. Last week it moved to 424 Second Avenue South, and its lack of interest in the chiropractic course is quite evident.

The school has adequate quarters on the second floor of a brick building. The most evident fact about it is, it is a workshop—for training rather than teaching. Classes meet in the clinic room, and much of the lecture work is doubtless instruction in the use of the apparatus. There are four large diathermy machines, one Morse-wave and two other generators, two Alpine lamps, one deep-therapy lamp, and fifteen or twenty chairs, all in this one room or in the treating booths curtained off from it. Across the hall is a large laboratory in which are six good microscopes (four of them new), a four-tube electrical centrifuge, and a considerable supply of reagent bottles, test tubes, and other chemical laboratory paraphernalia. Two or three doctors' offices adjoin the clinic room.

Classes are held mornings and until one o'clock, after which students may remain for clinics. There are separate evening classes for those who cannot attend during the day. The course reaches through from three to six months, depending on the student's ability to master it, and the tuition is \$150. A physiotherapy diploma is given, and for \$10 additional, but without additional work, a diploma (and degree) in naturopathy.

The naturopathic diploma is issued by the Lincoln Chiropractic College. A chiropractic course, reaching through twenty-four months, is said to be offered, but it is highly improbable that any new students are be-

ing enrolled for it. All interest is evidently in the physiotherapy work, given under the name of the Professional Assistants' Training School. The student is advised to take this course, buy the additional naturopathic diploma, go to a state that has no naturopathic law and begin practice; he will then be licensed without examination when a naturopathic law is enacted. Attention is called to the fact that there are about 800 chiropractors licensed in Minnesota, not over 300 of whom were examined. It is expected that "dozens" of states will enact laws regulating naturopathy within the next few years, and the "grandfather clause" is counted on as an unfailing feature. It served the osteopaths and then the chiropractors; it is now serving the naturopaths; under what name the next crop of incompetents will claim its favor is not yet known.

The student body is said to number twelve and the

faculty four. Three of the faculty members are permanent; the fourth varies; he usually represents some electrical supply house. Dr. McAvoy, who seems to be in charge of the school, states that he holds an "O. P." certificate or license from Illinois. He is intelligent, earnest, and business-like. He claims to be curing numerous cases of gonorrhea by the use of diathermy; he inserts one electrode into the urethra (or into the rectum if there is prostatitis), and by observing an attached thermometer he keeps the affected tissues at 107 degrees (?) for five minutes; by three weeks of such treatment he states that he has quite recently cured a case of gleet of twelve years duration; the gonococcus, he declares, cannot survive a temperature of 107 degrees. Other faculty members were not discussed, and repeated requests for catalog or other literature were ignored.

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# CASE REPORTS

## KIENBOCK'S DISEASE

REPORT OF CASE

F. W. VAN VALKENBURG, M.D.

*Long Prairie, Minnesota*

Kienbock's disease is the name given to a chronic slowly progressive type of osteitis of the semilunar bone, causing pain and disability.

W. Mueller recognized three forms of the conditions and classified them according to their etiology.

1. Anatomical form—due to abnormal pressure lines from anatomical anomalies.

would tend to support the idea of a nutritional disturbance.

The first complaint of the patient is that of a lame wrist. A history of trauma violent enough to account for the severity of the lesion may or may not be obtained. When the disease is fairly well advanced, which usually requires from six to eight months, examination reveals the following:

1. Definite tenderness on pressure over the semilunar bone.

2. Limitation of flexion and extension of the wrist.

3. Swelling of the wrist, without local heat or



Fig. 1. S, semilunar bone.

2. Occupational form—due to repeated minimal trauma.

3. Traumatic form—due to a single marked pressure insult.

The etiology is ascribed by Kienbock to a momentary laxation in the course of which there is an avulsion of the dorsal ligaments with tearing of the most important blood vessels. The pathological report on the case given here was bone atrophy, which



Fig. 2.

redness, which is increased or brought about by use of the hand.

4. The head of the third metacarpal is on the same level as those of the second and fourth, while normally it is more prominent.

5. Pain localized over the semilunar bone on tapping the head of the third metacarpal with the fist closed and the hand in ulnar adduction.

X-rays made early usually are negative. The films made later, about the seventh to the ninth month of the disease, show the semilunar bone

whiter and more dense and also the detail exhibited by the surrounding bones is lost. Still later, added to the above, there is fragmentation and shrinkage of the bone.

The following diseases should be considered in differential diagnosis.

1. Tuberculosis. The joint is stiff and partly

lame and the other reported that the wrist was lame, painful and swollen. In Henderson's two cases operation was advised against, and no follow-up is reported. The first operated case reported in American literature was by Joseph J. Kurlander, and his patient wrote him two months after the operation as follows: "I can say that my wrist has not troubled me

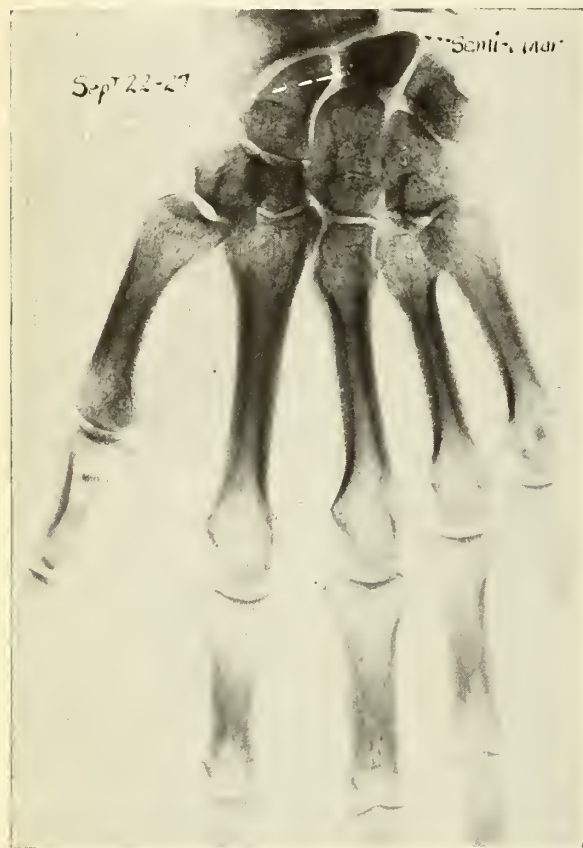


Fig. 3. F, site of beginning fracture.



Fig. 4. S, semilunar bone.

flexed, with some muscular atrophy. In late cases the joint presents a puffy swelling, loses its contour and becomes spindle-shaped. The x-ray shows bone destruction and in late cases new bone formation.

2. Chronic Arthritis. There is a nodular swelling of the joint with muscular wasting and pain on movement during exacerbations. A history of other joints being involved at one time or another is usually obtained. The x-ray is generally negative.

3. Lues. Involvement of the wrist most often takes the form of a periostitis. Other signs of lues can be found and a positive Wasserman obtained.

Conservative treatment, such as immobilization for one or two months together with massage and electricity to avoid atrophy, is advocated in the early cases, while operation is advised for the cases of long standing and those in which conservative treatment has failed. Goldsmith presented three cases, advised operation in two cases, which was refused, and was unable to trace the third. In the two cases he was able to follow, one reported the wrist a little

again, since I went back to work, although it is a little more stiff than the other one." The second operated case was that of Roscoe C. Webb, and his patient sixteen months later stated that his wrist did not hurt and he had been working steadily for over a year.

Because of the fact that conservative treatment had failed and the patient was practically incapacitated as the pain and swelling became gradually more pronounced, we decided to remove the semilunar bone and offer the following case report:

E. C., cabinet maker, male, aged 39, first consulted the writer in April, 1927, because of a lame right wrist, which had troubled him since November, 1926. There was no history of injury to the wrist. Examination showed limitation of flexion and extension at the wrist joint with no swelling. A blood Wassermann proved negative, the patient advised to wear a wrist support and return for observation. The first part of June, 1927, the wrist became markedly more painful, especially at the base of the thumb and on

the palmar surface of the wrist joint. The pain was of a dull aching character, was increased by work and use of the hand and was accompanied by swelling with no local heat or redness. Almost at the beginning of his trouble he experienced pain in the wrist when pulling with the thumb and index finger.

On July 5 a cast was applied to the wrist, which enabled the patient to return to work to a limited extent after a month's enforced idleness.

Dr. R. G. Allison reported on *x*-rays as follows:

July 11, 1927. Plates show a definite sclerosis of the semilunar bone of the wrist. There is no evidence of bone or joint destruction.

August 21, 1927. Plates show a beginning fragmentation of the semilunar bone. In addition there is beginning palmar dislocation of the semilunar bone.

September 22, 1927. Plates show a beginning fracture through the semilunar bone. There is no further evidence of pathology.

Conclusions: The findings in the semilunar bone of the wrist are those of Kienbock's disease, which is a localized process. The condition has progressed definitely since July, and I believe the treatment is complete removal of the bone.

Casts had been applied to the wrist from July until October. These enabled the patient to work to a limited extent, although there was some swelling and considerable pain when the hand was used at all extensively.

On October 4, 1927, under ether anesthesia an incision one and a half inches long was made in the dorsal surface of the wrist. The tendons of the extensor muscles were retracted and the semilunar bone dissected free from its surroundings and removed in fragments. Dressings and support by means of a splint were applied.

Dr. E. T. Bell reported on the specimen submitted as follows:

Microscopic sections show bone atrophy; no signs of inflammation. This shows atrophy of the bone, but I suppose it would be classified as Kienbock's disease.

The patient was able with wrist supported by a strap to return to work in a month. There has been a steady constant improvement although lateral movement of the hand causes slight pain. He has said that if it never gets any better than it is at present, the result is satisfactory to him. Extension and flexion are approximately one-half that of the left wrist.

#### SUMMARY

1. Kienbock's disease is a chronic progressive disease with definite findings which can readily be diagnosed by close observation and use of the *x*-ray.

2. Judging from the comparative results of conservative and operative treatment in the cases cited

and the continued disability from this disease, operative removal of the bone is justifiable.

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#### MULTIPLE MYELOMA

##### REPORT OF CASE

A. CHRISTIANSEN, M.D.

*Saint Paul*

The diagnosis of this extremely rare disease is comparatively simple if one is looking for it. However, in looking up the literature one finds some 13 cases reported at the Rochester clinic, Bloodgood reports 13 cases, while the University of Minnesota museum has a collection of four cases, which suffices to show its rarity.

It is an intensely interesting entity involving in its differential diagnosis a number of diseases the most important of which are metastatic carcinoma, sarcoma, the leukemias, pyelonephroma and some of the generalized cystic diseases.

This patient, sixty-eight years of age and previously in vigorous health, was an officer on the police force for thirty years. His best weight was 220 pounds.

He first came to my office about two years ago complaining of lumbar pains, loss of weight and strength described by the patient as a "run down condition." Routine examination revealed a marked pyorrhea with nine or ten carious teeth and a rather marked albuminuria. The patient was advised to go to the hospital, for further examination and treatment, but refused. He was next seen again at the office in March, 1927, almost two years later, when he again complained of the same symptoms, pain in the lumbar region but in addition there was pain higher up in the chest on the left side posteriorly, also loss of weight and strength, and an apparent anemia with yellow tinging of the skin. The patient wore an anxious expression and in general presented the same picture that was present two years previously except that the symptoms were more exaggerated. There were still present the marked focal infection and the albuminuria. However, the patient was this time prevailed upon to go to the hospital.

During the two years intervening between these office visits the patient had received a back injury in October, 1926, while turning a heavy valve, being then in the employment of the Northern States Power Co. as a night watchman. To this injury, patient attributed much of his lumbar pain, though from the history of events it was quite obvious that this was not likely.

The striking feature of this case was the lack of findings on repeated physical examinations and par-

ticularly so when considering the advanced stage of his illness. Aside from the emaciation and cachectic, anemic appearance, suggesting malignancy, there were few physical findings. The heart and lungs were normal. There was a swelling over the eighth rib on the left side in the posterior axillary line which gave a sense of crepitation to the palpating finger. X-ray examination showed this swelling to correspond to an indefinitely outlined mass 5 or 6 inches in length on the eighth rib, which was reported as a possible bone cyst by the roentgenologist. This tumor mass was aspirated but no fluid withdrawn; the needle passed readily into the rib mass.

The abdomen was retracted, flaccid, and no masses were palpable. The liver and spleen were not enlarged. The rectum and prostate were normal. Gastro-intestinal x-ray and fluoroscopic examinations were entirely negative. There was a slight tenderness over the gallbladder. The Wassermann was negative. The extremities were negative.

Blood examination was as follows: r.b.c, 2,100,000; Hg., 45 per cent; w.b.c, 3,100; p.m.n., 57; lymphocytes, 37; large mononuclears, 2; eosinophiles, 3, and basophiles 1%. Poikilocytosis and polychromatophilia were present. Coagulation time, 13.5 minutes; bleeding time, 5 minutes. Urea nitrogen, 42 mg.; creatinine, 2.8 mg. per 100 c.c. of blood. Blood pressure 110 over 60. It is quite evident we were dealing with a secondary type of anemia, the leukemias and other types of anemias being ruled out.

The urine showed heavy traces of albumin, occasional finely and coarsely granular and hyaline casts, a few pus cells, the specific gravity varying from 1,020 to 1,023. No blood cells were found. Cystoscopy was not done, as there was no evidence in repeated urinalyses of pyelitis, pyelonephroma or other kidney disease.

At this time the best diagnosis that could be made was nephritis probably due to focal infection (carious teeth, apical disease and pyorrhea) and possible bone cyst of the eighth left rib. However one could not but feel that there was malignancy present in some form or another. This patient looked malignant yet nothing could be found aside from the mass on the rib as a possible clue.

Treatment was aimed at improving the blood picture if possible and at removing the focal infection in the hope of improving the patient's general condition and perhaps of later cutting down on the rib tumor. The coagulation time was brought from 13.5 minutes to 9 and the bleeding time from 5 to 2 minutes. At this time extraction of the carious teeth was begun and required considerable time and care. There was a marked tendency to bleeding and one or two teeth were removed at intervals of one to three days and cavities carefully packed, the whole requiring about 2 weeks. In the meantime patient's pains in the chest

and lumbar region were at times excruciating, the patient refused further treatment and investigation, became very despondent, and, being on the verge of melancholia, was allowed to go home. There were alternating periods of improvement and relapses, all the while the pain being the dominant symptom. At times this simulated sacro-iliac dislocation quite definitely.

However, the patient was finally prevailed upon to return to the hospital June 15, 1927, for further x-ray examination of the lower spine and pelvis. These led to the diagnosis of multiple myelomata. The vertebræ, pelvic bones and upper extremities of the femurs all showed disseminated areas of rarefaction varying in size from that of a pea to that of a half dollar. Dr. A. E. Lundholm suggested making the Bence-Jones test of the urine. This test proved positive. This reaction is usually present in this disease although not pathognomonic.

The patient died one month later, July 14, 1927. An autopsy was done by Dr. Wm. O'Brien of the University of Minnesota, which bore out the diagnosis.

The following is a brief report of the autopsy. There is a large edematous tumor in the eighth rib in the mid-scapular line; tumor removed from this region is hemorrhagic and meaty; the bone has been destroyed.

Exploration of the bodies of the first and second lumbar vertebræ shows tumor tissue similar to that found in the rib. The right ilium shows extensive destruction. The finger can be passed through the body of the bone. Rather soft red meaty tumor tissue is present in the cavity; it is also found invading the soft tissues. A similar change is found on the left side. The trochanter of the right femur is found to be soft and filled with tumor tissue.

The heart is normal. Right lung shows terminal broncho-pneumonia. Spleen, liver, stomach, intestines and other organs are negative for tumor tissue.

Diagnoses: (1) Multiple myeloma involving ribs, lumbar vertebræ, pelvis and femur; (2) invasion soft tissues of pelvis; (3) broncho-pneumonia (right); (4) adhesions over liver, spleen and appendix; (5) bilateral hydrocele; (6) cloudy swelling liver and kidneys. Unfortunately no x-ray films were made of the skull, the bones of which are involved in many cases.

Conclusions: The importance of x-ray examinations is beautifully illustrated in this case.

More liberal and early use might have resulted in an earlier diagnosis. This proved to be an extremely interesting case and one in which the predominant symptom was backache (lumbar pain) such as we meet with daily. This one symptom causes many perplexing problems and is only too often minimized in importance, which is the principal reason why some of the cults find such a profitable field among patients not investigated carefully enough.

## SKIN GRAFTING\*

## REPORT OF CASE

S. R. MAXEINER, M.D.  
*Minneapolis*

The case I am presenting, although nothing unusual, is interesting from the standpoint of plastic surgery. The patient has been in the Government Hospital for nearly five years for pulmonary tuberculosis complicated by glands in the neck. He was treated by different methods, including the *x-ray*.

During the past one and one-half years he has had a leather-like area of the skin with telangiectasis and an ulcer approximately 3.5 by 3 inches. The center of the ulcer contained calcified tuberculous glands. He was sent to the diagnostic center at Cincinnati, which is maintained by the Government, where a biopsy was done to rule out malignancy and a diagnosis of *x-ray* burn was established. He was returned to this city for surgical treatment.

A pedunculated flap about six inches long and four inches wide was freed in its mid-portion and remained attached over the tip of the shoulder and at the mesial edge of the left scapula. The mid-portion was rolled under to form a tube and the skin edges undercut and brought together so that the denuded area was entirely closed. At the end of about a month we began

\*Presented before Minneapolis Surgical Society, Dec. 1, 1927.

to free the flap at the base of the left scapula by cutting an inch or two at a time, sewing the skin back again after the delayed method. In order to determine the vitality of the flap a rubber band was placed around the end to be freed and it was determined that the circulation was adequate from the end which was to be left attached.

I went widely outside, at least 0.5 inch into healthy tissue, and undercut the burn, removing the greater portion of the scar tissue and invading the fibers of the sterno-mastoid muscle. After the area had been widely denuded the freed end of the flap was sutured in place and the edges very carefully approximated. At the end of one month the circulation was again tested with a rubber band. Having determined that the flap was viable, after severing the pedicle we proceeded to trim the flap and fit it into the denuded area. The patient, as I present him to you today, is quite well as far as the neck is concerned, being completely healed, and the area on the back is now almost entirely healed.

In reply to the question asked, "Was the ulcer painful?" I will state that the patient had so much pain and required so much morphine in the last year and one-half that he became a drug addict. During this time it was virtually impossible to live with him. No amount of effort would please him and he was a constant source of trouble. Since the operation he has stopped the use of morphine entirely and has become an entirely changed, pleasant and coöperative patient.

## THE VISIT OF DR. JULIUS BAUER OF VIENNA

Professor Julius Bauer of Vienna is coming to this country under the auspices of The American College of Physicians, and will deliver several lectures and also the Convocation oration before that body at their next meeting in New Orleans, March 5 and 9.

Professor Julius Bauer is Professor of Medicine in the University of Vienna, and Physician-in-Chief to the Polyclinic. He is well known to many American students because of his clinic on Endocrinology, which is held in that hospital.

Professor Bauer has published extensively. His most noteworthy contributions to medical literature are his

lectures on "Constitution and Inheritance for Students and Physicians"; his monograph with Dr. Conrad Steins on "Constitutional Pathology as Illustrated by Otology"; his monumental book on "The Constitutional Disposition of Internal Diseases" and his latest work on "Internal Secretions."

Professor Bauer is not only an interesting personality possessed of an encyclopedic type of mind, but he is also a great student, an admirable teacher and a splendid lecturer, who speaks English fluently. His coming visit to this country should give many of our physicians an unusual opportunity to learn at first hand his now much-discussed ideas of constitutional pathology and the endocrine glands.

# President's Letter

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THE annual secretaries' meeting was held at the St. Paul Hotel on January 11, 1928. The object of this was two-fold: to inform the various county societies on the affairs of the State Association, and, more important still, to stimulate and develop the county societies by contact with each other.

The meeting opened at 9:00 a. m. with reports from the chairmen of the various newly appointed committees, outlining as far as possible the work for the year. Then the meeting was thrown open and every secretary was invited to talk on anything he saw fit. The discussion brought out one thing conclusively, that a business-like and enthusiastic secretary is the greatest asset a society can have. There were sixty-two men present at this meeting and, although all were invited, there were ten societies not represented, and as is generally true at any conference of this kind the ones who were absent probably needed it most.

At the luncheon the Basic Science Law was discussed and the operation of the board described by Doctors Scammon, Bell, and Boyer. Their impression was that the board was doing everything it was intended to do, namely: raise the standards of medical practice in the State of Minnesota, and doing it with a minimum of friction.

H. Martin Johnson representing the Pharmaceutical Association asked for more coöperation between the two associations on problems of mutual interest. The city press was represented by Mr. Leo Owens and the rural press by Mr. Sam S. Haislet. The newspapers are apparently anxious for any publicity along proper lines. Their problem is to find out what the medical profession wants in the way of publicity. Dr. H. M. Johnson outlined what may confront us in the next Legislature, and voiced the warning that we must be prepared. Dr. Wilson described a health publicity campaign in a country newspaper by a county society.

Dr. W. F. Braasch made several constructive suggestions for county societies and outlined a plan for yearly district, economic and social meetings under the leadership of the councillor. Dr. Workman discussed the finances of the State Association and emphasized the need of conserving our funds and building up a reserve for the future. Dr. Erling Hanson told how Hennepin county keeps contact with the press and also with various health organizations and finally Dr. Opegaard of Crookston told us how they run a live society in the Red River Valley. One was again impressed with the value of live secretaries.

The council and Dr. George Earl's committee met at dinner and the council meeting ran on to midnight. It is astonishing how many problems come before the council: finance, ethics, policy, membership, State journal, etc. All in all, it was a very instructive day. Secretaries should be, and as a rule are, the best informed men on society.

The next morning at 9:00 o'clock the regional officers' conference opened. This is not a new medical society (many have asked that question). It was a conference of the presidents and secretaries of the adjoining States of Wisconsin, North and South Dakotas and Minnesota; the object being to discuss questions of administration, legislative programs, public health education and many questions which are common to all States. Iowa was invited but no one came.

Dr. McGovern, president of the Wisconsin State Society, occupied the center of the stage. He is an enthusiast and has done a great deal for Wisconsin. While his brother was Governor of the State, the two of them put over a legislative and public health program which places Wisconsin ten years ahead of the rest of the country. Dr. McGovern is "sold" on Wisconsin and he sold a good deal of it to the rest of us.

From New Rockford, North Dakota, Dr. John Crawford brought the news that the statute of limitations which had been reduced to two years by previous activity was put back to six in the last session of the legislature due to the lack of organization on the part of the State Medical Association; consequently he said the State is overrun with ambulance chasers and malpractice suits. This is a lesson for Minnesota. South Dakota is organizing for a Basic Science Law campaign under the able leadership of Dr. S. M. Hohf, with good prospects of success.

This meeting lasted until 3:00 p. m. and it was decided to have another meeting A. M. A. week in Minneapolis. Everyone felt it was a very useful conference and should be a yearly occurrence.

This closed the session, two days of meeting and eating under the same roof. One might characterize it as a physical and mental marathon: all of it worth while. I wish every member might do it once—like myself.

*C. B. Wright*

(See Postscript on Page 194)

# EDITORIAL

## MINNESOTA MEDICINE

*Official Journal Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine, and Minneapolis Surgical Society.*

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Vol. XI MARCH, 1928 No. 3

and if the medical profession, like all professions and vocations, did not include in its membership incompetent and dishonest individuals, there would be no opportunity for any practitioners outside of the medical profession. Because, after all, doctors of medicine are those members of society who devote their attention to the study of the healing art both as handed down by preceding generations and as developed in recent years. The responsibility of the organized profession in watching its membership is only too apparent.

The belief is sometimes expressed that we as a profession should ignore in every way irregular cults as they arise from time to time, on the theory that if such cults have no excuse for existence, they will naturally die out. Opposition seems to stimulate them to survive the longer.

There is evidence that the phenomenal rise of chiropractic has reached its summit and is rapidly on the decline. That the cult was ever dignified by legislative act through the institution of a State Chiropractic Examining Board was a gross blunder for which the public has itself to blame. Whether the lethargy of the organized medical profession was partly to blame for not informing the legislators and public in general depends on one's viewpoint as to how far we are our brother's keeper.

The power of an informed public opinion on any subject cannot be overestimated. The report by the Council on Medical Education of the American Medical Association, which appears on page 176 of this issue, is authoritative and gives a brief summary of the present status of the chiropractic and naturopathic schools throughout the country, the two schools in Minnesota being described more in detail.

### Meeting of the Board of Control

It was the writer's pleasure to attend, on Feb. 7, 1928, a meeting called by the Board of Control of the heads of the various Minnesota state institutions and the superintendents of the tuberculosis sanatoria, at the Gillette hospital in St. Paul.

This relatively little known and somewhat hid-

### Chiropractic and Naturopathic Schools

It is doubtful whether the average physician, not to mention the average layman, has any conception of just what a Naturopath is. Doubtless a Naturopath would have difficulty in intelligently defining himself. It might be said that the Naturopath holds a somewhat similar position to the chiropractor as the latter does to the Osteopath. When the curriculum of the osteopathic schools was lengthened, the field was opened for another short-cut school for "doctors" and chiropractic was fashioned from a rib or rather the spine of Osteopathy.

If the science and art of the practice of medicine did not have insurmountable limitations

den state institution reflects the very greatest credit upon its founder, the late Dr. Gillette, and upon Dr. Chatterton and his medical staff, who succeeded him.

On the day of our visit they had about two hundred and forty resident patients, and stated that some twenty-seven others reported as "out-patients" for continued observation, inspection and treatment. Thus, one can see, their youthful and happy graduates have increased very rapidly.

The skins of many children exposed in the solaria to light coming through special glass, seem to disprove the idea that our winter sun is too oblique in its incidence and our urban centers too smoky, to let much ultra-violet ray through; for these children showed unmistakable sunburn, as did the nurse in charge.

It is stated that "no one deserves a greater degree of happiness than they give"—and on this basis, even those children hanging in apparatus by their necks evidence little fretfulness or pain; and the far more than busy superintendent, Miss McGregor (who manages to maintain this institution at a per capita daily cost of \$2.00) seems to radiate the greatest happiness of all! Those who have not seen these ideal schoolrooms and the artistic auditorium within the Dowling memorial, should certainly do so when the opportunity comes. Notice the spirit displayed by the teachers and the attendants, and do not fail to see and hear the parrot.

Curiously, Dr. Chatterton reports that they now receive very few tuberculous joint cases. The largest percentage represent post-polio paralyses; next in order come the aftermath of neglected and certainly preventable rickets. Most of the tuberculous cases come from rural districts, indicating, he thinks, that the urban control by boards of health and the pasteurizing of milk, have done much to cut down bone, joint and gland tuberculosis within our cities.

The heads of the insane and correctional institutions might well listen very attentively to Dr. E. C. Rosenow, of the Mayo Foundation, speaking on encephalitis. Certainly, "a disease that maims and distorts minds is more to be dreaded than one which cripples and deforms the body." His slides, and the movie demonstration of the antics of his inoculated and experimental animals, speak most forcefully for the correctness of his conclusions. It was his belief that

what are called "late sequelæ of encephalitis," are not the result of the initial disaster, but the continued working of the same etiology. As he has repeatedly stated before, he is able to culturally identify a "pleomorphic streptococcus" of varying size and filterability; inoculation of this microbe into rabbits produces the clinical pictures seen in man of lethargy, myoclonus, torticollis, etc. Hiccough and chorea become peripheral evidence of central nervous diseases, although, fortunately, these noisy, acute evidences, sharply in contrast to the hidden and silent forms, do not produce the late Parkinsonian and other deadly results. He discussed the rheumatic and the encephalitic types of chorea—in fact, in correlating and connecting up what has been termed "influenza," with encephalitis, he believes in a common etiology in the one instance with epidemic influenza a "pneumotrophic microbe, and in the other a neurotrophic affinity."

His are striking and epoch-making assertions. Scientist Rosenow does not need the obvious commendation of an audience as uncritical as he had. If, as a principle of law, our forefathers were right in demanding that they should be judged by their peers, one can well state that the time should be hastened when the matter presented by Dr. Rosenow should be weighed and sifted without prejudice and hesitation, by those only who are competent to act as judges—namely, those engaged in similar work. In the meantime, his hopeful attitude on the eradication of foci of infection; his offering of a serum for recent acute cases; and his hopefulness for some improvement even, from the use of a properly made stock vaccine—all deserve our very highest consideration.

Some features pertaining to the meeting of the sanatorium executives and the Board of Control deserve a special communication.

E. L. T.

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### Minnesota Medical Alumni Reunion

No better opportunity could be afforded than the American Medical Association convention in Minneapolis in June for a get-together of all the alumni of our University of Minnesota medical school. So many of the classes are so small and their members so widely scattered that periodical class reunions are almost unheard of. There isn't a university medical graduate who would

not "get a kick" out of seeing former friends and acquaintances of undergraduate days. It is safe to say that in all probability another fifteen years will doubtless elapse before the American Medical Association will again meet in Minnesota and the present favorable opportunity present itself for a wholesale reunion of medical graduates.

We are for such a reunion and if you are one of the 1,800 graduates of our state medical school, we hope you will catch some of the enthusiasm of the reunion committee headed by Dr. N. O. Pearce and will be on hand at the banquet and entertainment on the evening of June 13. For those who are golfers a tournament is being arranged for the afternoon of the same date. Bear the date in mind, the thirteenth, and signify your intention of being on hand to Dr. Pearce, 823 Nicollet Avenue, Minneapolis, Minnesota.

Begin right now to talk it up to your alumni associates.

### Basic Science Law Violator

The test of the pudding is in the eating. So is it with the new Basic Science Act. Time alone can tell whether the teeth in the Act as passed are to prove effective or whether what has been everybody's business is to continue to be nobody's concern. Probably the viewpoint of the jury as to the importance of the possession of a license to practice medicine will determine as much as any other factor how effective the new law will be.

The first instance of an arrest under the provision of the new Basic Science law was that of Dr. Boyd Williams of Minneapolis, which took place in February. Dr. Williams, although possessing an M.D. degree and having practiced some twenty years in Minneapolis, has been doing so without a state license. Although licensed in Wisconsin some years ago his qualifications did not warrant the issuance of a license in Minnesota. He was refused a license by the Basic Science Board and, proof having been obtained that he has been practicing without a license, a warrant was issued for his arrest.

Physicians throughout the state are urged to submit evidence where individuals are practicing without licenses. The evidence, however, is necessary if irregularities are to be corrected.

## ASSOCIATION ACTIVITIES

### CONFERENCE OF SECRETARIES

#### THE MEDICAL PROFESSION AND NEWSPAPER PUBLICITY\*

MR. LEO OWENS—Mr. Chairman and Members of the Minnesota State Medical Association:

Your program notes that my subject today is "The Medical Profession and Newspaper Publicity." This reminds me of the backwoods citizen who, when he heard for the first time of the strange proportions of the giraffe, exclaimed, "Thar ain't no sich animal!" Publicity and the doctor too long have been strangers for their mutual benefit, but this has not been the fault of the newspaper. Until physicians withdraw themselves from the cloak of mystery and shyness that has enveloped medicine and its practice, I fear that this false misunderstanding must exist.

I do not like the word "publicity." We in the newspaper offices abhor its use, and I will tell you why. When anyone comes to us and speaks about publicity, we wonder what he has to sell; whether he wants the news columns or the advertising columns, because the editorial department is concerned solely with matter that pertains to news or the dissemination of interesting information—interesting not to a group alone, but to the broad general public; in other words, the mass mind.

Now, contrary to the general belief in the medical fraternity, medicine is News. It pertains to Life itself, the most cherished possession of every human being. Why, then, should the advance of medicine and surgery be concealed? I grant that there are cases of announcements of new cures, discoveries and inventions that are pure fakes. But there are others that are pure gold. Therefore, if medical men have so tested a particular cure or device that will prolong or sustain life until they are satisfied with it, let them be the first to tell the world about it. And I promise that the newspapers will be only too eager to assist.

I am happy to know that for the past year the Ramsey County Medical Association has had a committee working with the newspapers. I am informed that this committee already has been very valuable in assisting our newspapers by standing ready at all times to answer questions, to see that medical news is set right before the public. We appreciate the assistance of this group and hope that this coöperation will increase in efficiency and strength.

Suppose an invention of assistance in the practice of medicine comes to our city. It has been tried out and found to be successful. It fills a need in a community. Be the first to tell your newspapers about it. Explain it in words that a layman can understand. When insulin was announced, the discovery was printed all over the world. Think how much more

\*Remarks by Mr. Leo Owens, Publisher of the St. Paul Dispatch and Pioneer Press, at the Secretaries' Conference, Saturday, January 14, 1928, at the St. Paul Hotel, St. Paul, Minnesota.

interesting and effective it would have been if the County or State Medical Society in Minnesota could have issued a statement for local consumption.

We, on our part, agree to consult and advise with you when news pertaining to your profession comes to our desk. We will ask your opinion about it. If you see fit to caution the public to take it with a grain of salt, we stand ready to print your caution. We can do no less.

The thing to remember is that a newspaper's standing in the community is based on confidence. You know what confidence means to the practitioner. We cannot any more afford to tamper with that confidence by publishing false and misleading information than you can by experimenting with your patients. Therefore, truth is to our mutual benefit.

Now, as to the gathering of news for publication: The newspaper has coming into its office from all over the world a vast amount of material. You can readily realize that, if all this were printed, your newspaper would resemble the "Five Foot Shelf." Editors who are trained in the handling of news are employed to publish, in their judgment, the best of the news; that is, news that will interest the great majority of readers. These men, with this training, know that medical news or information comes among the first items of public interest.

It is not the sole purpose of the newspaper to furnish news. It must also assist in educating its readers. For that reason it publishes learned articles. It devotes a column or so to medical advice, the care of the home, the proper guidance of the child, etc. It also must entertain, assist in retaining the morale of the people by publishing things that contain a smile.

Let us sum up the newspaper's function briefly.

First—To furnish news.

Second—To educate and inform.

Third—To entertain.

You are chiefly concerned with the first and second subjects. We are ready to assist, but we cannot help unless you are willing to cooperate. Will you?

#### REPORT OF COUNCIL

DR. H. M. WORKMAN—Mr. Toastmaster and Gentlemen:

Concerning the finances of the State Association, there is but little to add to the published financial statements of other years. The income as you know is practically all from dues. We have a few over 2,000 members; this will be increased, I think, a hundred or more by the slow payers. That will give us over \$30,000 from that source. Add to that the earnings of the State Medical Journal, possibly \$1,000, and the interest on bank balances of \$200, will give us near \$31,200.00. Besides this there is now about \$12,000 in the permanent investment fund. That has been slowly growing for many years. Some day, I hope I may live that long, we will see the dream of the Father of that fund, the late R. J. Hill, come true. We will then have a home of our own which will be a source of income and stop the outgo for rent. While we are

now paying only \$300 the space for our files grows and our office force will increase in number and then we must have more room. We are now under great obligation to the Minnesota Public Health Association for space and many other favors but when they need this room we must move.

We are paying \$2.00 per member to MINNESOTA MEDICINE, that takes over \$4,000.00. The secretary's salary is \$3,000.00, and his traveling expenses about \$500.00, stenographers and clerks \$1,500.00. This, like some of the other items, is only estimated, but cannot be much less and may grow to be considerably more, depending on the work of the Committees. Telegraph and telephone expense is about \$200.00. The treasurer receives \$100.00 and his expense of about \$30.00; most of that must go for postage.

The annual meeting of the Association costs on an average about \$1,200.00; with the meeting of the A. M. A. in Minneapolis as the guests of the State it may cost more this year. The next item I feel rather diffident about mentioning, that is the expense for special meetings of the Council, which includes president, president-elect, secretary, treasurer, and nine councilors. A generous allowance by the Council for the 13 men is \$200.00, out of which they pay their postage, railroad fare, and hotel bills. I am sure that it is often less than \$100.00.

The legal expense is greatly reduced since we abolished the medical defense, but we still have a few hang-over cases and the council needs legal advice. This is estimated at a thousand dollars. If the "cults" decided to test the Basic Science Bill, as they have threatened to do, we must tender the attorney general the assistance of our attorneys, so this item may prove very inadequate at the sum stated.

This conference was estimated to cost \$400.00. The attendance is better than was expected, and, judging by the way the "chow" has disappeared, we underestimated the cost.

I think it was Councilors Wattam and Savage who, being ladies' men, generously recommended that the Auxiliary be allowed the sum of \$100.00, and this is gladly paid.

The item Miscellaneous Expenditures of \$2,000.00 has been criticized as being too large for such an indefinite classification. It can not well be subdivided as it includes stationery for the various officers, postage for the secretary's office, express, drayage, street car fare for office girls sent on various errands, premium on the treasurer's and secretary's bonds, typewriter and mimeograph supplies, thumb tacks and many other incidentals itemized on the vouchers.

These vouchers written by the secretary must first be approved by the president of the Council and the treasurer. The books and vouchers are audited by a committee from the Council and finally are gone over by expert accountants.

The money to be spent from the Educational Fund this year will likely not reach the sum allowed in the budgets—that of \$3,000.00. You know headquarters in this or any other high class hotel costs money. If

the committee entertains a member of the House or Senate and he has a Newburg lobster appetite, you will not get far if you suggest that a ten cent dairy lunch will be cheaper.

Last year one item of considerable expense incurred by the legislative committee was a copy of Morris Fishbein's "Medical Follies." A copy was presented to each legislator and that, added to the plausible arguments of Herman Johnson and his Committee members, won for us the passage of the Basic Science and Medical Practice Acts. If you will stop to think what sacrifices this Committee made in time, health and loss of business for the benefit of the rest of us, we can well say all honor to Johnson, C. B. Wright, J. T. Christison, S. H. Boyer, Charles Bolsta and L. Sogge and with the new members added to that committee by Doctor Wright it is greatly strengthened and whatever expense incurred was small and legitimate, considering the results, which were great beyond our expectations. Their work is not yet done. Those "Cult Birds" die hard and we must prove to them that they are dead. If there is a resurrection for such bodies, it must be in some other state than Minnesota.

The Public Health Education Committee, and that is George Earl's committee, is allowed \$5,000.00 and the results will show that this money has been well expended.

The Hospital and Medical Education Committee is allowed \$250.00. The other Committees may have small expenses to meet, but the total will not exceed a few hundred dollars, with the possible exception of the Historical Committee. Their work is not fully outlined but they are going to need money for a stenographer and postage.

The total expenses, therefore, will not be less than \$26,000.00 and maybe more, leaving a surplus of some \$5,000.00 for emergencies.

The records, as you heard, of the Basic Science Board show that there are some 1,200 physicians in this state who are not members of the State Association. Now something is rotten in Denmark when the Councilors, State Secretary, local Secretaries, and other officers *drawing pay* cannot get most of these men into their local societies. It is the worst kind of bunk to say that one in every three physicians in this state is not worthy of membership in a local society. Better is it to confess that a number of us are not qualified for our jobs. We needs must have every reputable physician enrolled. We want his influence and help and need his dues. Go home and tell your local Society to do away with petty professional jealousies. Let us add some 800 or 1,000 names to the membership roll. Be missionaries. Few can harm us, and we can benefit them all.

Our membership has gradually grown under the increase in dues. We have accomplished so much with the funds thus secured that I hope in another year or two at the most we can materially reduce the dues if you wish.

Or to figure it as Dr. Savage does:

Your \$15.00 to the State Association is budgeted by the Council as follows:

MINNESOTA MEDICINE—which is recognized as one of the best of its kind in the United States .....	\$2.00
Administrative expense—including salaries of Secretary, Treasurer, stenographers, rent secretaries' conference, Women's Auxiliary, annual meeting, legal advice, etc.....	5.25
Deficit from first year's educational work.....	1.50
Public Health Education.....	3.50
Committee on Hospitals and Medical Education..	.12
Reserve .....	2.63
	<hr/>
	\$15.00

On the basis of the average earning capacity of the physicians of the State being \$5,000.00 per year, your dues of \$15.00 annually represent a tax of 1/3 of 1 per cent.

## MISCELLANEOUS

### RICINOLEATED TOXIN

On page 79 of the February number of MINNESOTA MEDICINE appeared an extract from the American Medical Association Journal of Dec. 17, 1927, that reflected upon the efficacy of ricinoleated scarlet fever toxin. Almost simultaneously a letter from Dr. W. P. Larson in answer to the above mentioned statement appeared in the American Medical Association Journal and is herewith reproduced. As a matter of fact active immunization against scarlet fever is so comparatively new that final judgment as to its value must be deferred. Much progress has been made in the effort to vaccinate against scarlet fever since the isolation of the specific streptococcus by the Dicks. It is only through laboratory investigation and clinical trial such as has been conducted by Dr. Larson that the ultimate goal will eventually be reached.

To the Editor: In *The Journal*, Dec. 17, 1927, the question is asked as to the present status of the single dose immunization against scarlet fever with ricinoleated toxin. In the reply the statement is made that "it is hardly to be expected that the addition of a 'detoxifying' agent will increase the immunizing properties of a toxin." This statement, I believe, is misleading.

The purpose of a detoxifying agent is not to step up the immunizing properties of a toxin but rather to make it possible to give toxin in sufficient dosage to stimulate immunization processes. The antitoxin in the toxin-antitoxin mixtures used to immunize against diphtheria is nothing other than a detoxifying agent. Without the use of antitoxin it would be impossible to give diphtheritic toxin in sufficient dosage to stimulate immunity, because of the severe reaction that would result. The anatoxin of Ramon as well as toxoid are diphtheritic toxins treated with detoxifying agents.

In their early work with bacterial toxins, Roux and Yersin found it necessary to use iodine trichloride as a detoxifying agent in efforts to confer a basic immunity against diphtheria in experimental animals. It is doubtful whether any attempt to immunize against a toxin will ever succeed when some detoxifying agent is not employed, because of the severe reaction and the number of doses that would be required.

Gabritschewsky, who first discovered scarlet fever streptococci toxin, and who recommended its use as an active immunizing agent as early as 1907, found that the toxin caused severe reactions if injected in immunizing doses (Berl. klin. Wchnschr. 44:556, 1907).

Sodium ricinoleate seems to be a suitable agent for detoxifying scarlet fever antigens.

With regard to the one dose method I should like to point out further that there is no reason why repeated doses may not be given if desired. Published reports show that one dose of the ricinoleated culture gives a 10 per cent higher incidence of negative skin tests than the five doses of the naked toxin also recommended. It would therefore seem that ricinoleated antigen has a decided advantage over other types of vaccine.

W. P. LARSON, M.D., Minneapolis.

Professor of Bacteriology and Immunology,  
University of Minnesota Medical School.

—Jour. A. M. A., Jan. 28, 1928.

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## OBITUARY

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### Dr. Herman G. Franzen\*

Herman Gustavus Franzen was born in Wedum, Sweden, on Jan. 14, 1873, the son of John Carlson Franzen, contractor and farmer. He came to America in his boyhood with his parents. He graduated from South High School, Minneapolis, with an outstanding scholarship record, having worked his way through school.

He taught school in the Dakotas, between college terms, and by this method was able to attend the University of Minnesota Medical School, and later the Northwestern University Medical School at Chicago, where he received his M.D. degree in 1905.

After this he took special work in Surgery at the Wesley Memorial and Cook County Hospital in Chicago.

Dr. Franzen began his practice in Minneapolis immediately after completing his course, and specialized in surgery, being on the staff of Asbury Hospital. He was a member of the Hennepin County Medical Society, the Minnesota State and American Medical Associations, of the Athletic Club, the Automobile Club and the Elks Club, and a 32nd degree Scottish Rite Mason.

He died January 16, 1928, and is survived by four brothers, one sister, and a widow.

A vigorous man of action, he had made for himself a successful life against odds, and had left his work while still in his prime, with no dimming of his powers, and at the height of his efficiency.

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\*Read at the regular monthly meeting of the Hennepin County Medical Society, held Feb. 6, 1928.

## REPORTS AND ANNOUNCEMENTS OF SOCIETIES

### INTERSTATE POST GRADUATE ASSOCIATION

The Spring Assembly of the Interstate Post Graduate Association will consist of a tour of the South and West starting at Chicago, May 16, and visiting medical centers at St. Louis, Nashville, New Orleans, Dallas, Los Angeles, San Francisco, Seattle, Portland, Denver, Omaha and ending at Rochester, Minnesota, June 8, whence participants can conveniently reach Minneapolis for the American Medical Association convention, June 11 to 15, inclusive.

The fourth annual consecutive Foreign Assembly sails from New York, June 16, for medical centers in Paris, Berne, Zurich, Munich, Vienna, Budapest, Prague and Berlin.

Further information may be obtained from Dr. W. B. Peck, Managing Director, Freeport, Illinois.

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### CATHOLIC HOSPITAL ASSOCIATION AND HOSPITAL CLINICAL CONGRESS OF NORTH AMERICA

The thirteenth annual convention of the Catholic Hospital Association of the United States and Canada and the second annual Hospital Clinical Congress of North America will be held in the Cincinnati Music Hall, Cincinnati, Ohio, June 18 to 22, inclusive, 1928. The fourth annual convention of the International Guild of Nurses will be held at the same time, in the same building, at night meetings.

This convention and congress will be one of the largest and most important hospital meetings of the year, and will comprise general scientific meetings, special clinics or demonstrations of hospital departments, and three hundred special commercial and educational exhibits. Outstanding authorities in medicine, surgery, pathology, nursing, dietetics and hospital administration, architecture and engineering will lecture and demonstrate in specially planned clinics representing the various departments of the modern hospital. A professional program of the highest interest and value is now being formulated, and all persons interested in medical and hospital service are cordially invited to attend. Further information may be obtained from John R. Hughes, M.D., Dean of the College of Hospital Administration, Marquette University, Milwaukee, Wisconsin, who is General Chairman of the Convention and Congress.

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### RICE COUNTY MEDICAL SOCIETY

At the meeting of the Rice County Medical Society held in Faribault, Minn., January 26, Dr. W. H. Robillard, of Faribault, gave an excellent report of the meeting held in St. Paul, January 14, for the consideration of the present day problems of hospital and medical education, after which he stressed the importance of collections, with particular reference to habitual "dead-beats"

who can, but will not, pay for services rendered. The subject aroused considerable discussion, and was then referred to the publicity committee to investigate ways and means to cope with this growing evil. Members of the publicity committee are Drs. W. H. Robilliard, S. B. Haessley and C. A. Traeger.

Dr. J. Moses, of Northfield, gave a report of a recent automobile accident in which the patient suffered a rupture of the aorta.

#### MINNEAPOLIS SURGICAL SOCIETY

Dr. Stephen H. Baxter will be the next president of the Minneapolis Surgical Society, to succeed Dr. H. B. Sweetser. He was elected at the last regular meeting of the society and will assume office in September. Dr. A. T. Mann was elected vice-president and Drs. W. D. White and E. C. Robitshek, councilors, the former to succeed Dr. Baxter. Dr. T. H. Sweetser was re-elected secretary-treasurer.

A dinner meeting will be conducted in March at the Nicollet hotel. Dr. Dallas B. Phemister of Chicago will speak on "An Experimental Study of Wound Shock."

#### HENNEPIN COUNTY MEDICAL SOCIETY

Dr. A. E. Hedback was elected president of the Hennepin County Medical Society at the annual elections. Dr. Stanley R. Maxeiner, retiring president, becomes chairman of the executive committee. Other officers are Dr. E. L. Gardner, first vice-president; Dr. J. M. Hayes, second vice-president; Dr. Erling W. Hansen, secretary-treasurer; Dr. T. A. Peppard, librarian.

Dr. Stephen H. Baxter and Dr. Maxeiner were elected to the executive committee for three years. Dr. A. S. Hamilton and Dr. Jalmar Simons were elected to the board of censors and Dr. J. Frank Corbett and Dr. George D. Head were elected to the board of trustees. Dr. J. G. Cross was named to fill the unexpired term of Dr. A. W. Abbott, deceased.

Delegates to the state convention are Dr. W. H. Aurand, Dr. Stephen H. Baxter, Dr. F. A. Erb, Dr. J. M. Hayes and Dr. R. T. La Vake.

#### AMERICAN MEDICAL ASSOCIATION DELEGATES

The apportioning of A. M. A. delegates from the component state associations will depend on the membership April first. Minnesota formerly had but two delegates but during the last three year period, which includes the 1928 meeting, we have had three delegates. As the membership of the A. M. A. House of Delegates is limited to 175, it is highly important that all eligible physicians in the state pay their dues at once so that we will be properly represented in the national association the next three years.

## OF GENERAL INTEREST

Dr. C. W. Kanne of Faribault has returned to his practice following an extended sojourn in California.

Dr. P. A. Smith and daughter, Lials, of Faribault recently returned from an extended trip through the Panama Canal zone and Cuba.

The St. John's hospital at Red Wing, according to a recent decision of the hospital association, will build an addition this year to cost \$100,000.

Dr. J. A. Myers, Minneapolis, addressed the Pennsylvania Tuberculosis Conference at Harrisburg in January on "What constitutes a normal chest."

Dr. Charles L. Farabaugh has announced the opening of offices for the practice of medicine and surgery in the Mueller Building, Robbinsdale, Minnesota.

Dr. Simon of Rochester has gone to Birmingham, Alabama, where he will be associated with Dr. Hargis in the practice of surgery. His address is 1131 28th Street North.

An addition costing \$100,000 will be built at St. John's Hospital in Red Wing, according to a decision made by the members of the hospital association at a meeting held in January. The hospital was established 25 years ago.

The new St. Cloud hospital built by the Sisters of the Order of St. Benedict was officially opened to the public February 12. Patients from St. Raphael's hospital, the predecessor of the new building, were moved into the new structure February 15.

Dr. O. V. Opheim has disposed of his practice at Starbuck, Minnesota, and is now associated with Dr. A. J. Moe at Sioux Falls, South Dakota. Dr. A. F. Giesen, formerly of Minneapolis, has taken over the practice of Dr. Opheim at Starbuck.

Ground will be broken in March for the three-unit addition to the University of Minnesota hospital. The addition will require about a year to complete and will mark the first major enlargement of the medical establishment on the campus since the cancer institute and the Todd Memorial were constructed in 1925.

Dr. Frederic W. Schlutz, head of the department of pediatrics at the University of Minnesota medical school, has returned from Havana, Cuba, where he attended the Pan-American Child Hygiene Congress as one of the three delegates appointed from this country by Secretary of State Frank B. Kellogg.

Dr. Robert Earl, Saint Paul, was re-elected president of the board of directors of the Northwestern Baptist Hospital Association and Dr. George Earl was re-elected president of the association at the twenty-second annual meeting held in January. The Mounds-Midway School

of Nursing which is conducted by the association has reported an enrollment of 108 student nurses this year.

Just before taking a train for Rochester the last day of January, Dr. H. M. Workman, of Tracy, fell on the ice and sustained a comminuted fracture of the fibula. This unfortunate accident, however, did not prevent Dr. Workman's visit to Rochester and presence at the banquet given that evening by Dr. Charles Mayo in honor of Dr. C. W. Hopkins, Chief Surgeon of the Chicago and Northwestern Railroad. According to last reports Dr. Workman has been visiting his office on crutches and is making an uneventful recovery.

The children's pavilion of the Abbott hospital, Minneapolis, built in 1921 by Mr. and Mrs. Thomas B. Janney, has undergone a re-organization under the trustees of the Westminster Presbyterian church of Minneapolis, with the coöperation of some twenty leading pediatricians of the city. The hospital, while affiliated with the Abbott hospital, will be known as the Janney Children's hospital. The new hospital will not affect the Abbott hospital in any way, as the adult patients will be cared for in the other buildings.

Six Minnesota graduate students of medicine have received appointments as fellows of the Mayo Foundation at Rochester, the graduate organization of the medical school of the University of Minnesota.

Together with 26 other students, they were selected from a field of several hundred candidates from all sections of the United States.

The Minnesotans are D. C. Ditmore, Rochester; H. A. Daniels, Staples; S. F. Herrmann, Welcome; H. M. Weber, Eden Valley; Hamilton Cooke, Hutchinson, and Hamline Mattson, Rochester.

"The Hebrew Physician" (HoRofeh HoIvree), the only medical journal published outside of Palestine which is written in Hebrew, has just made its initial appearance.

This Journal is under the editorship of Dr. Moses Einhorn and Dr. A. Goldenstein. It contains articles on

general medical subjects and has a special section devoted to new Hebrew medical terminology. All physicians who are interested in this journal are requested to communicate with the editors, addressing them c/o "The Hebrew Physician," 286 West 86th St., New York City.

#### THE NORTHWEST CONFERENCE FOR CHILD HEALTH AND PARENT EDUCATION

With the progress of the work of organizing and planning The Northwest Conference for Child Health and Parent Education the interest of the profession and the public has grown with it. Some 125 organizations and institutions are now united in sponsoring the Conference, with their representatives making up a joint committee of 289 people from which the working committees have been drawn. Committees on Program, Places of Meeting, Publicity have been actively at work and their efforts show for themselves in a prospectus just issuing from the Press and now in process of distribution. This gives all the business arrangements of the Conference: places, hours and dates of meetings; details of reduced railway fares; hotel accommodations; registration; tickets, costs, etc.

A provisional program presents the topic for discussion and, so far as present negotiations permit, the personnel of the speakers. The completed program will be issued later.

The Conference will open at 9:30 a. m. on Tuesday, March 27, and will continue for three days. Morning afternoon and evening sessions will be held at the Saint Paul Auditorium. Two luncheon round table meetings will be offered daily at the Saint Paul Hotel. A special luncheon meeting for men will be planned at The Saint Paul Athletic Club, on Wednesday, March 28, at noon, when an address will be given upon the subject of "Paternal Education."

A dinner meeting will occur at 6:30 upon the last evening of the Conference at the Saint Paul Hotel.

Course tickets, admitting to the eleven main sessions, will be sold at \$3.00; single session tickets at fifty cents; luncheon tickets to holders of course or session tickets at seventy-five cents; to non-holders of tickets at \$1.00; dinner tickets for the banquet at \$2.00.

The Auditorium seats 3,200 and the promoters of the Conference, including the medical profession of the Twin Cities and from elsewhere, look to see it filled.

Announcement has been made of the consolidation of the Cuyuna Range hospital and the Miners' hospital at Crosby, Minnesota. The Cuyuna hospital is to be converted into a clinic and the Miners' hospital will be used exclusively for hospital purposes. Dr. Phil Hallenback, formerly on the staff of the Cuyuna Range hospital, is to become a member of the staff of a St. Cloud hospital. Dr. E. J. Pengelly will continue hospital work in Chicago. The new organization will be conducted under the supervision of Dr. B. A. Smith and Dr. F. A. Allen. Dr. E. W. Pollard of Minneapolis will become a new member of the staff of the combined institutions. Dr. S. S. Shannon, who has been with the Miners' hospital for the past ten years, will remain.

#### Postscript to President's Letter (Continued from Page 186)

P. S.

We are trying to get some information on the economic situation of the medical profession in Minnesota. So, if you will send in the information asked below I will know you read this month's letter and will in another letter give you the results of the survey. Please mail to the secretary's office, 11 West Summit, St. Paul, Minnesota.

Number of years in practice.....

Gross income 1927.....

Net income 1927.....

Amount of income from salary or contract practice .....

My practice is (not) in Duluth, Minneapolis, St. Paul .....

I practice in.....County.

# PROCEEDINGS OF THE MINNESOTA ACADEMY OF MEDICINE

Meeting of Nov. 9, 1927

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Wednesday evening, November 9, 1927. Dinner was served at 7 p. m., and the meeting was called to order by the President, Dr. John E. Hynes, at 8 p. m. There were 31 members and 1 visitor present. Minutes of the October meeting were read and approved.

The following men were elected to membership in the Academy:

Dr. Owen W. Parker, Ely, Minn.....Associate Member  
Dr. Hilding Berglund, U. of M.....Honorary Member  
Dr. John S. Abbott, St. Paul.....Active Member

The scientific program of the evening was as follows:

DR. A. W. IDE (St. Paul) read his Thesis on "Spinal Injuries." This was illustrated with numerous lantern slides.

## DISCUSSION

DR. W. A. JONES (Minneapolis): I think Dr. Ide's pictures are very graphic and very clear and show us many of the peculiar conditions which are found in the spine. But I wondered, while looking over the diagnoses and pictures, whether we are very much ahead of the chiropractor and osteopath in our diagnoses; we seem to have just as much trouble in making a diagnosis. They have no trouble at all; *they know*, and the people believe that they know. How are we going to enlighten the public as to the difference between the diagnosis of the regular and the cultist? I think they have made just as many mistakes as we have, but it occurs to me that we are very faulty in our methods of examination. I do not believe that I could recognize one-third of the cases of fractures of the spine. The question is, how are we going to overcome the tendency of the people to accept an unethical diagnosis when we have fallen down badly ourselves. The cultists have a method of taking pictures, too. Of course, those who have seen the pictures taken by a trained x-ray man will recognize and appreciate the difference between these and the pictures taken by the irregulars. Dr. Ide shows us very definitely in his pictures what is wrong; the inexperienced man shows us very indefinitely. The cultists attempt to diagnose, treat and cure subluxation of the spine. I would like to ask Dr. Ide if there are very many cases of subluxation, as is claimed, and whether they are usually intractable. After hearing Dr. Ide's paper and seeing his pictures, I am still puzzled by information given out in regard to fractures, subluxations, and dislocations.

DR. J. F. CORBETT (Minneapolis): I think the railroad and various insurance companies have paid out enormous sums of money for supposed injuries to the spinal column, and of course that has only been made possible by the plaintiff receiving support from the medical profession. It seems to me it is time we got together on this. It would almost pay the corporations to spend a large sum of money to have a large number of backbones of well people x-rayed because

anomalies in development are exceedingly common. I have nearly a peck of vertebræ which I picked up in the dissecting room, showing all sorts of defects.

There was one thing that I was in hopes Dr. Ide might show us, and that was a Charcot spine. I never saw one I recognized and would like very much to know what they look like.

It occurred to me there was only one thing he did not mention, which is sometimes of great importance, and that is spina bifida anterior, with a mass that may be in the thorax, giving the appearance of two hearts; or in some instances in the abdomen they could be mistaken for abdominal tumors. These cases are not so rare that we can call them curiosities and I think they should have a place in the list.

DR. E. L. TUOHY (Duluth): I would like to ask Dr. Ide if in his experience fractures of the transverse processes, low down, have been of sufficient importance or productive of enough discomfort to call for any especial surgical treatment later on.

Apropos of Dr. Ide's splendid discussion and reference to anomalies of the vertebra, I recall a very dramatic instance of a malingerer who had twice (before he came under our observation) collected considerable sums of money from certain companies, alleging in each instance that a fall had brought on his distress. Obviously he had found out in some way that he had such an anomaly, and in the early days of roentgen study it was not so easy to get the clear-cut information that we now have and that is so well illustrated in Dr. Ide's slides. In fact on one occasion this man was about to be operated on in a Chicago hospital by the late Dr. Ochsner. He circumspectly left the hospital sometime during the night before. In our hands he stood for all sorts of tests—spinal punctures, etc.—and apparently had a definite level lesion. While we were studying him the claim agent of the company became anxious and gave him a considerable sum of money. Leaving the hospital in Duluth, he took a taxicab to Superior, Wis. However, some one had the foresight to follow him up and have him observed, and he was caught throwing his crutches under the sidewalk and bravely walking off!

DR. F. R. WRIGHT (Minneapolis): Far be it from me to discuss injuries of the spine. They are entirely out of my line. What I was especially interested in was treatment. In several cases lately, I have used adhesive plaster up and down the spine. A four-inch strip of plaster extending from the cerebral vertebra to the sacrum will immobilize the spine so that the man can't bend forward.

DR. J. F. HAMMOND (St. Paul). Dr. Ide spoke of the difficulty of diagnosing fracture of the spine and said, if I understood him, that the injury or fracture often was not diagnosed until operation. I would like to ask what the indications for operation are, and what operations are being done on them.

DR. A. SCHWYZER (St. Paul): Dr. Ide can be congratulated on the beautiful material he has. It was interesting to see the great variety of things we have in that one field. In order to discuss this demonstration one will have to pick out a number of detailed condi-

tions. I think it was Dr. Jones who mentioned subluxations. They occur especially between the atlas and axis, then along on the cervical spine and again between the sacrum and iliac bone. The latter are quite frequent and cause a lot of misery and I have seen a large number of them. A good many have come to the office and in treating them, while one man suddenly pulls with all force on the leg, another holding on the shoulders, you push the sacrum forward while pulling the ilium back. You hear a snap in the distinct cases and, after strapping, the patient may walk out happily surprised and practically well. Regarding the subluxation between the atlas and the epistropheus, at the last meeting of the Western Surgical Association, Dr. Jackson of Wisconsin, advised against immediate prompt reduction. I do not agree with this. I have had two such injuries. By pulling carefully on the head and slightly increasing the forward and lateral bending and also a little rotation, you can make an immediate reduction. It needs utmost care, but is by far the neatest result. Only you must have the exact anatomy of the joint before your eyes.

Another interesting condition, which was only mentioned, is Kummell's disease. That is due to injury with probably minute crushing, but at the time of injury without positive findings. An interesting case of this kind came under my observation. A young man had been wrestling and was thrown on his head. He had a good deal of pain and immobility of the head and neck. It was plain he had some definite injury, though by examining him closely I could not make out any particular condition. I kept him in the hospital with extension in bed and kept him immobilized, but the whole family of the patient, who said he felt so well, insisted on taking him home, though he was strongly advised against it. As the next best thing a high collar of strong felt was moulded and made to fit from over his shoulders to the chin and ears. The patient came back about six weeks later with a good deal of pain and the head sinking gradually to between the shoulders. The only thing to do was to make extension over a good many weeks. He finally got well.

Dr. Corbett mentioned spina bifida anterior. I would like to mention that this also occurs on the sacrum, especially in pre-sacral teratoma. These teratomata are known to reach at times into the sacral canal.

Dr. Ide's paper shows how thoroughly we have to look into the matter of injuries of the spine before we give an opinion. I would like to emphasize this by mentioning an interesting case we had recently. The patient was a woman, exceedingly nervous and almost hysterical, a farmer's wife from up north, who never had been away from home. Ten or twelve years ago we operated on her for severe lacerations. It took about 6 months before she could feel it had done her any good. I did not see her for many years after that. She had had children in the meantime. While I was away a year ago she was operated on by another surgeon for hemorrhoids. Then last winter she was brought to me by her husband, and was a most nervous woman. She had an unbearable pain at the anus. She acted unreasonable as soon as you touched the anus.

Under a little gas we did some stretching for that. But she also had pain in the pubic region and was very hypersensitive on vaginal examination. She visited a large clinic and was told it was all nervousness. Another surgeon this summer took her tonsils out, but even that (!) did not help. She now declared she had to urinate every 10 or 15 minutes. I decided to do a cystoscopy, but on the appointed day I asked her how many times she had urinated the past night. She said "once," and I found out that she had nights when she did not urinate at all. So we desisted from cystoscopy in this unreasonably nervous person, but made an x-ray picture. And what did we find? The pelvis was all right, but the 3rd lumbar vertebra had a completely honeycombed appearance. It was a neoplasm of the entire 3rd lumbar vertebra, which was not otherwise deformed except bulging laterally on both sides. This illustrates what difficulties and surprises one is liable to encounter in this field.

DR. IDE (in closing): Dr. Jones suggested the position we are in with reference to the osteopaths. It seems to me that the general run of men practicing regular medicine ought to recognize the fact that there is such a thing as dislocation of the spine. Dislocations in the cervical spine and between the fifth lumbar vertebra and the sacrum are frequently seen. Dr. Jackson, of Madison, Wisconsin, in his recent paper, described dislocations at the upper end of the spine and suggests the treatment.

DR. HAMMES (St. Paul): Did you have any cord symptoms in the case where the spine was dislocated?

DR. IDE: Yes, we did. There was some question as to whether the patient had had a stroke or whether a fall had caused all the trouble. He had partial paralysis of one arm and one leg, but the involvement was not extensive.

The condition of spina bifida anterior probably should be mentioned but it is somewhat difficult to diagnose. I think it is well to take it into consideration.

We have never found it necessary to resort to surgery for fractures of the transverse process. These injuries are ordinarily cured by rest treatment.

Dr. Hammond inquires about surgery in these obscure fractures. I do not operate on these spines. In case an operation is done on the spine, when the field is exposed, the actual condition of the bone is often somewhat different than that shown by the x-ray picture. In so far as I am personally concerned, I believe it is inadvisable to operate on spines unless the indication is positive.

I wish to thank the members for their discussion of my paper, and I also want to thank you for my membership here.

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DR. F. R. WRIGHT (Minneapolis) read a paper entitled "Preparation of Prostatic Patients for Operation"

#### DISCUSSION

DR. G. SCHWYZER (Minneapolis): Recently I planned to make a suprapubic cystostomy in an old man for retention of urine where I otherwise would have ap-

plied a duration catheter, but the man had such excruciating pain from a duration catheter which I inserted that I was forced to remove the same. I would like to ask Dr. Wright whether he had experienced such difficulty in keeping a duration catheter applied.

DR. WRIGHT (in closing): Answering Dr. Schwyzer's question about a retention catheter, it is not infrequent that a man will not be able to retain a catheter. In that case I have the patient catheterized every six hours. The effect of this will be shown by citing the case of an old Jewish friend of mine in North Minneapolis. He had an acute cystitis, and had about two ounces of residual urine. He could not retain a permanent catheter, and we were compelled to make a suprapubic cystotomy. His urine secretion had dropped down to 500 c.c., but at the end of two weeks he was again passing 1,800 c.c. I think this indicates the effect of emptying the bladder too quickly.

As far as the retention of the catheter is concerned, I think it is better to catheterize the patient until you have decompressed the kidney. If relieving the back-pressure in the kidney causes the suppression of urine, we can at least fill the bladder with water and attempt to raise the back pressure in the pelvis of the kidney. If we have made a suprapubic cystotomy we are not able to reduce this back pressure.

Regarding the size of the prostate, I have observed this: that on rectal examination we often find a fairly large prostate, when at the operation of this patient we remove only a very small tumor. This is due to the fact that the tumor produces a condition of edema of the prostate which we mistake for an increase in the size of the whole organ. Three times I have opened a bladder to remove an hypertrophied prostate, to find that the tumor disappeared on pressure of my fingers; that is, that the increase in size in the prostate which I had mistaken for a tumor was due to a firm edema.

DR. GUSTAV SCHWYZER (Minneapolis) reported a case of carcinoma of the transverse colon in a young woman, who made a quick recovery after resection. Lantern slides were shown.

DR. WILLIAM LERCHE (St. Paul) showed lantern slides illustrating the arrangement of the bronchopulmonary lymph nodes and the lymphoid masses in the lungs, and also slides of cases with enlarged bronchopulmonary nodes, calling particular attention to the latter as potent factors in the etiology of bronchiectasis in children. Slides were also shown of cases with abscesses in the inferior tracheobronchial lymph nodes, and Dr. Lerche's method of operation by puncturing the abscess through the bronchoscope.

The meeting adjourned.

CARL B. DRAKE, M.D.  
Secretary.

## PROGRESS

Abstracts to be submitted to Section Supervisors.

Members are urged to abstract valuable articles which they run across in their reading and send the abstracts to the physicians in charge of the respective sections. In order to avoid duplication it would be well to communicate with one of the section supervisors before the article is abstracted.

## SURGERY

### SUPERVISORS:

DONALD K. BACON,  
LOWRY BLDG., ST. PAUL

VERNE C. HUNT,  
MAYO CLINIC, ROCHESTER

ON ENURESIS NOCTURNA: Hector Charles Cameron, M.D. (Guy's Hospital Reports, 1927, LXXVII, 482-489). Enuresis in childhood, always common, has, since the War, become more common; still much that has been written on the subject of the etiology may be dismissed as manifestly untrue, for instance, that it is a variant on masturbation or due to some organic abnormality. The hope of relief is so strong within the child's mind that some surgical procedure, with its confident suggestion of cure, may upon occasion succeed. Circumcision, distention of the bladder with graduated volumes of fluid, injection of fluid under the skin of the perineum, and other such devices, may have a strong suggestive effect, but certainly have no other.

The tendency to enuresis often waxes and wanes with the rise and fall in the general health. The removal of infected tonsils or adenoids may often cause so great an improvement in the general health that spontaneous recovery from enuresis is encouraged. In the great majority of cases the urine is normal.

A close study by the author of a series of cases has convinced him that enuresis is a disorder of purely functional nature and probably should be recognized as a manifestation of hysteria in childhood. In general, the child with enuresis is quick, sensitive and precocious. He wets the bed not because he does not care, but because he cares too much. Pessimism and over-anxiety on the parent's part may be quite as prejudicial as harshness or punishment in preventing the sufferer from regaining the necessary self-confidence. With the passage of years, with the growth of personality and character, enuresis almost always ceases. Whoever undertakes treatment and endeavors to assist the child to gain control must be equipped in some way with the power to restore self-confidence to the sufferer.

HAROLD E. SIMON, M.D.

## PEDIATRICS

### SUPERVISORS:

CHESTER A. STEWART,  
LA SALLE BLDG., MINNEAPOLIS

ROY N. ANDREWS,  
MANKATO CLINIC, MANKATO

**TREATMENT OF INFANTILE ECZEMA:** Israel Binder, M.D. (Arch. of Pediatrics, January, 1928). Eczema may be defined as an acute, subacute, or chronic inflammation of the skin. It may be divided into two broad types: the wet or exudative type, usually occurring in healthy overfed babies, mostly breast-fed, and the dry type, found in undernourished babies.

*Eczema Rubra.*—This type affects the cheeks, forehead, scalp and not infrequently the ears, neck and cubital spaces, or any other portion of the body. It begins with the appearance of small, red, acutely inflamed papules which coalesce and exude serum. Crusts may form, which may become so hard as to form a mask over the face. Underneath these crusts the skin is raw and oozing.

In the acute stage, calamine lotion is used locally. If there is an undue amount of itching present, one per cent phenol with two drams of glycerin to six ounces is added. In cases where there have been pustules or where areas of infection have been superimposed, probably due to scratching by the infant, the author has used yellow ointment, which is a combination of equal parts of two per cent ammoniated mercury and two per cent yellow oxide of mercury. This secondary infection must be cleared up before any improvement can take place.

Tar finds its greatest use in this type of eczema. After infection has been cleared the author has been using ungt. picis liquidis, one ounce to one ounce Lassar's paste, without salicylic acid. Two c.c. triple distilled water is given intramuscularly, usually in the gluteal muscles. One injection is given weekly, unless we are dealing with a severe case; then it is given every third day.

*Seborrheic Eczema.*—This type of eczema, usually occurring on the scalp, is a very common condition. In mild cases, generally rubbing with warm olive oil and shampooing twice a week, then combing with a fine comb to remove the scales, is effective. In the severe cases, boric acid ointment is rubbed on the scalp for three successive days, several times a day, without removing the ointment. Resorcin grs. 10 to one ounce of boric acid ointment is then applied to prevent recurrence.

*Intertriginous Eczema.*—To prevent the irritation as far as possible is the first and important essential factor in the treatment.

R. N. ANDREWS, M.D.

**THICK CEREALS AND CONCENTRATED FORMULAS: THEIR VALUE IN PYLORIC OBSTRUCTION AND VOMITING:** Julian L. Rogatz, M.D. (Arch of Pcd., January, 1928). Within the last few years a definite step forward has been made in the feeding of infants by the recognition of the value of thick cereals in certain types of cases, notably in vomiting due to pyloric stenosis, and the tendency to use more concentrated formulas in general.

Finkelstein uses as much as 20 per cent carbohydrate in concentrated albumin milk. Von Pirquet (Vienna) developed "Dubo" by doubling the caloric value of whole milk with 17 per cent sugar. Czerny-Kleinschmidt use a high fat content successfully in their butter-flour mixture by removal of the more volatile fatty acid from the butter and combining with starch. Healthy infants tolerate two-thirds milk without danger and even undiluted whole milk may be used in the new-born with caution. The infant is never too young for starchy food and the results are excellent.

In 1924 it was demonstrated roentgenologically and confirmed by a later series of roentgenologic studies (Hotz) that the infant stomach wall has the power of surrounding and grasping its food content—termed peristolic function (Stiller) and not to be confused with the more familiar peristaltic wave.

If one supply a food sufficiently "solid" to offer a desired resistance to the stomach wall, this at once results in a more tonic gastric musculature, permitting it to surround and retain the food by peristolic contraction. Due to concentration there is a smaller volume of food; the thickness of the food causes less air to be swallowed and the smaller volume, which incidentally is just as rich calorically as a more dilute formula, is more easily grasped.

Lindberg made the interesting observation that the peristolic function was more likely to appear in the infant when in the vertical position, as against feeding in the horizontal position. Often this change of position permits of proper emptying of the stomach and vomiting ceases.

Thus peristolic function is of great practical significance inasmuch as it definitely explains the value of thick cereals in various forms of vomiting, thereby placing a hitherto empirical therapy upon a scientific basis and completely justifying its use with greater confidence than ever.

R. N. ANDREWS, M.D.

### COUNCIL PASSED

The notable success of many pharmaceutical products which have been accepted by the Council on Pharmacy and Chemistry of the American Medical Association for inclusion in "New and Non-official Remedies" recommends not only the plan itself, but the wisdom of the medical profession in selecting these reliable "Council Passed" remedies for daily use.

These remedies are the result of research and clinical study. They have been announced in our pages and are worthy of further investigation on the part of our readers.

## GYNECOLOGY AND OBSTETRICS

## SUPERVISORS:

ARCHIBALD L. McDONALD,  
LYCEUM BLDG., DULUTH

L. W. BARRY,  
LOWRY BLDG., ST. PAUL

## EYE, EAR, NOSE AND THROAT

## SUPERVISORS:

VIRGIL J. SCHWARTZ,  
PHYS. & SURG. BLDG., MINNEAPOLIS

E. L. ARMSTRONG,  
205 W. 2nd STREET, DULUTH

**PROPHYLACTIC EXTERNAL VERSION:** R. A. Bartholomew (Am. Jour. Obst. & Gyn., Nov., 1927). This article is concerned with the advantages of converting a breech into a vertex presentation during the latter months of pregnancy. From a small series of cases with breech presentation, the author estimates a direct fetal mortality of from 10 to 15 per cent as compared to 2 to 3 per cent with vertex presentation. The mother is spared a prolonged labor, and increased danger of cervical or perineal laceration or sepsis. The indications are breech or shoulder presentation, diagnosed in the latter months of pregnancy. The contra-indications are multiple pregnancy, pelvic contraction, dead fetus, previous Cesarean section, threatened uterine rupture, hydramnios, oligohydramnios, premature separation of the placenta, onset of labor, placenta previa, bicornuate uterus and eclampsia. The objections are, possibility of mistaken diagnosis, prolapse of the cord, possibility of cord being caught about the neck, rupture of the uterus, premature labor or rupture of the membranes. The corrected position is not always permanent, and the procedure is difficult in proportion to the resulting disadvantages.

The author gives his experience with 54 breech presentations discovered in a series of 455 cases. Cephalic version was accomplished after one or more attempts in 53. The procedure had to be repeated several times in a number of instances. Seven were finally delivered in the breech presentation. Spontaneous cephalic version occurred twice after one or more failures by manipulation. The author believes that at present he can avoid 80 per cent of breech presentations. There was no fetal mortality or untoward complication which could be charged to the procedure.

Version is preferably done by turning towards the occiput, though following in the opposite direction did not cause extension of the head. The Trendelenburg position was not used in this series though it is recommended by some. Ether was used twice. No bandages or binders were used following version.

ARCHIBALD L. McDONALD, M.D.

**Typhoid Vaccine.**—This typhoid vaccine (New and Non-official Remedies, 1927, p. 367) is also marketed in packages of 30 ampules (ten complete immunizations). The Gilliland Laboratories, Inc., Marietta, Pa. (Jour. A. M. A., November 19, 1927, p. 1783.)

**CHRONIC OTORRHEA. ITS RESPONSE TO CALOT'S SOLUTION:** M. Reese Guttman, Chicago (Illinois Medical Journal, Aug., 1927). The almost limitless number of medicaments and procedures which have been employed at various times in the treatment of chronic discharge from the ear only serves to accentuate the fact that none of them is of outstanding value.

In the ordinary acute ear inflammation following a naso-pharyngitis the disease is limited to the tympanic mucosa and therefore heals readily in most cases. However, in the severe cases, especially when associated with scarlet fever and measles, a chronic discharge is apt to result. The deeper, submucous tissue, and even the bone, becomes involved, since the tympanic mucosa is, in fact, a mucoperiosteum which furnishes the bone its blood supply. A chronic osteitis with discharge is therefore often the result of these ulcerations. Much depends upon the virulence of the bacteria involved, the streptococcus mucosus being notoriously dangerous.

In favorable cases, granulations quickly cover the ulcers and bone, and are soon followed by new epithelium. In others, bone necrosis and even fistula may develop, followed by excessive granulation formation which prevents the ingrowth of normal mucosa and may be so great as to fill the tympanic cavity and even project into the external canal. These are composed of granulation tissue, not myxomatous, therefore the term "aural polyp," by which these are known, is a misnomer. The thin secretion from these granulations usually becomes purulent from secondary infection, therefore both these factors must be combated in order to obtain healing.

The Eustachian tube at times may drain ear discharges into the nasopharynx; occasionally, too, a mucoid overflow of secretions from the nose and tube, during an acute rhinitis, may escape through the ears as a pseudo-otorrhea. The latter is often found after a radical mastoid operation. Occlusion of the tube may result from adenoids, large lymph follicles in Rosenmüller's fossa, a hypertrophic tubal mucosa, posterior turbinal hypertrophy, or synechia after adenoidectomy.

Otorrhea due to cholesteatoma or chronic infective mastoiditis can be treated only surgically. Rarely there may be local pathology due to malignancy or to rare

infections, such as actinomycosis, or to a systemic tuberculosis, lues or diabetes.

The discharging ear may be compared to a fistula from skin to carious bone in any part of the body, only that here it happens to be the bone of the ossicles or tympanum; it is also analogous to a fistula from skin to mucous membrane, *e.g.*, fistula in ano, only in our case it is from the external ear to the mucosa of the nasopharynx.

Fotiade noted the great success of the use of Calot's solution in fistula in ano, in Bucharest, and tried it in chronic otorrhea. The composition of Calot's solution is:

Guaiaicol .....	1.0
Creosote .....	5.0
Iodoform .....	10.0
Ether .....	30.0
Olive Oil.....	70.0

The first three are antiseptic, and caustic to the granulations, while the ether permits better attack by dissolving secretions covering the granulations. Bacteriolysis is increased through a diapedesis of polymorphonuclear cells. It is also stated that disintegration of these leukocytes releases their proteolytic and lipolytic enzymes for action. The discharge becomes thin and serous; the bacteria disappear and the few mononuclear cells characteristic of chronic otorrhea are replaced by large numbers of polymorphonuclear cells.

Out of 64 cases Fotiade obtained a complete cure in 61, or 95%. Of the others, one disappeared, one died of tuberculosis, and one required a radical mastoid. Of the 81 selected cases of the present series, 66, or 81%, were cured. There were 31 cases of otorrhea without mastoid involvement, 38 with *x*-ray evidence of mastoid sclerosis, and 12 with cholesteatoma.

All of the first group were cured, though the tonsils and adenoids were removed in 9 cases. Thirty-five of the second group were cured. Twelve cases required the addition of nose and throat treatment. Three, with a discharge of long standing and marginal perforations, required the radical operation. Except that the odor became less offensive, not one in the third group was benefited.

The treatment consisted in simple cleansing of the ear, mainly with tubular suction. The patient was then told to shake the bottle, instill 5 to 10 drops into the canal (affected ear uppermost) and make alternate pressure upon the tragus so as to pump the mixture into the tympanic cavity. At times it may be tasted in the throat. This is done nightly for a week. The secretion will then become thin and serous. Use of the solution is then stopped and boric powder insufflations are employed, until, in a few days, the ear is dry. If not at first successful the use of 60% silver nitrate on large granulations, or attention to the naso-pharynx, may be found necessary. Following this the mixture is used again.

VIRGIL J. SCHWARTZ, M.D.

## MEDICINE

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THOMAS A. PEPPARD,  
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CONCLUSIONS REGARDING TECHNIC FOLLOWING ONE THOUSAND INTRATRACHEAL INJECTIONS OF IODIZED OIL IN ADULTS: Stuart Pritchard, Bruce Whyte and J. K. M. Gordon (Bulletin of the Battle Creek Sanitarium and Hospital Clinic, XXIII, 1, January, 1928). A number of methods have been used to inject iodized oil into the bronchial tree, among which are the transglottic, subglottic, bronchoscopic and supraglottic.

The writers have employed the supraglottic method. This paper is based on the experience derived from a series of one thousand consecutive injections by the supraglottic method.

### PROCEDURE

1. Instruct the patient that it is imperative for him to refrain from coughing and swallowing.

2. The anesthetic solution and oil should be warmed to prevent reflex cough and to facilitate the easy and rapid flow of oil over the mucous membrane of the larynx and trachea.

3. The pharynx and larynx should be sprayed with a 5 per cent cocaine or butyn solution. Two c.c. of a 5 per cent cocaine or butyn solution may be injected into the trachea by the use of a small syringe while the patient is instructed to inspire through the mouth. This opens the glottis and the anesthetic will find its way down the larynx.

4. In two or three minutes the patient should feel a lump in the throat. The oil can now be injected. Twenty c.c. of warm oil should be ready in a special metal syringe. The tongue should now be drawn well forward. By slight but constant pressure on the piston the oil is projected against the under surface of the epiglottis while the patient breathes deeply and quietly through the mouth.

5. At this juncture, again instruct the patient to refrain from coughing or swallowing. A tendency to cough may be overcome by the patient breathing more deeply while the operator pulls the tongue out and at the same time lessens the pressure on the syringe piston.

6. The curved cannula should not touch any part of the pharynx. The tip must not touch the epiglottis but should be placed in such a position that the flow of oil will impinge upon its under surface.

7. There has been some question as to the necessity of bronchoscopic aspiration of cavities before their injection with oil. Bronchiectatic cavities are apparently equally well filled whether the oil is injected before or after they are emptied. The high specific gravity of the oil (1,350) enables it to displace the bronchiectatic contents (secretions).

8. Quantity of oil necessary.—From 15 to 20 c.c. is usually enough for one injection. This will generally visualize a goodly portion of the lung field. Gravity

and aspiration are the forces which bring the oil to the terminal branches. Thirty to forty c.c. may be given if a more extensive field is to be investigated.

9. Position of the patient.—This depends on what particular part of the lung field the operator desires to visualize. As the great majority of cases requiring lung field visualization are suffering from some affection in the lower part of either lung, the upright position is the one more frequently used. If the lower right lung is under suspicion, the patient is instructed to lean slightly forward towards the right side, still keeping the head in a vertical position. The reverse is true when the left pulmonary base is to be visualized. If the middle or upper lung fields are to be studied, place the patient on a tilting table in the recumbent position, lying on the affected side.

10. Choice of lungs fields.—Many cases show no differentiating sign either from the clinical history, physical examination or radiological study. In such cases both lower lungs should be injected. It is preferable to wait twenty-four hours before giving the second injection.

#### SOME INDICATIONS FOR THE BRONCHIAL INJECTION OF IODIZED OIL

1. Cases of chronic cough associated with long-standing infection in the upper respiratory tract, particularly sinusitis.
2. Cases of cough with purulent expectoration giving the history of a previous pneumonia or the inspiration of an organic foreign body.
3. Cases of long-standing cough with little, if any, expectoration in the absence of frank pulmonary disease.
4. Obvious cases of bronchiectasis for the purpose of mapping the diseased area.
5. Cases of bronchial fistulæ.
6. As a therapeutic agent.

#### POSSIBLE COMPLICATIONS

1. The swallowing of the oil during the operation. Iodized oil is a chemical compound which disintegrates and liberates metallic iodine when acted upon by intestinal alkaline secretions. If the patient has swallowed any considerable amount of oil (fluoroscopic observation), a glass of hot water containing a dram of soda bicarbonate will often act as an emetic and prevent the oil from entering the intestinal tract. A dose of castor oil will expel the compound before there is time for disintegration and absorption.
2. In their series of a thousand cases they experienced six instances in which some slight untoward effects followed the injection of the oil.

#### CONTRA-INDICATIONS

1. Acute affections such as occur in the early stages of cold and influenza.
2. Acute active tuberculosis.
3. Very extensive and advanced pulmonary suppurations, particularly when the patient is extremely weak.
4. Advanced circulatory complications such as angina pectoris, aneurysm and cardiac decompensation.
5. Recent hemoptysis.

A. T. LAIRD, M.D.

## BOOK REVIEWS

Books listed here become the property of the Ramsey and Hennepin County Medical libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

PENDULUM: BABY'S HEALTH DAY BY DAY. Editor not named. Pages not numbered. Chicago: The Professional Press, 17 North Wabash Avenue, 1928.

MODERN BAKING POWDER. Juanita E. Darrah, A.B., M.S., A.M. 125 pages. Illus. Cloth, \$1.00. Chicago: The Commonwealth Press, 1112 South Wabash Avenue, 1928.

GYNECOLOGY. Howard A. Kelly, A.B., M.D., LL.D., and collaborators. 1043 pages. Illus. New York and London: D. Appleton & Company, 1928.

PATHOLOGICAL PHYSIOLOGY OF INTERNAL DISEASES. Albion Walter Hewlett, M.D., B.S. Revised in memoir by his colleagues under the editorial supervision of George De Forrest Barnett. 787 pages. Illus. New York and London: D. Appleton and Company, 1928.

THE NEW MEDICAL FOLLIES. Morris Fishbein, M.D., Editor of the Journal of the American Medical Association and of Hygeia. 235 pages. New York: Boni and Liveright, 1927.

The author alphabetically reviews all the cults with a brief description of each in the first chapter, including Couéism, Christian Science and Abrams' System. His satire, humor and fearless frankness in discussing these subjects are as evident as in his first book, "The Medical Follies." He writes relative to Christian Science, "If anything, it is scientific, since the practice of absent treatment has reduced the art of living without apparent work, to a science." In reference to Abrams, he states, "Abramism is to be credited with the most rapid and conspicuous rise and fall of any cult of our modern period."

Chapter two is devoted to beauty cults, including beauty clays and cosmetics. He derides the beauty doctors and irregular plastic surgeons. He criticizes the craze and fad for reduction, also Steinach and Voronoff method of rejuvenation. He discourses upon the improved methods of bread making and explodes the bread treatment for fat reduction.

His article on the "End of Eclecticism" is interesting.

He cautions the medical profession to be reluctant in believing all the literature referring to the results secured with physiotherapy apparatus. Many of these claims are far-fetched, to say the least, due to the element of commercialism.

The author delves into psychoanalysis, and Freudianism. In discussing Carl Jung, a disciple of Freud, he states, "He has lectured with great pecuniary emoluments. His nomenclature runs from the tongue of the four hundred more glibly than 'two no trump.'"

In conclusion he discusses medical ethics and the

physician of the future, in which he upholds the general practitioner and urges more coöperation with the specialist.

On condemning state medicine, he argues that after a graduate spends from twelve to fifteen thousand dollars in preparation, he must be content to accept a salaried position. "He is no longer a physician, he is no longer treating human beings for the relief of their ailments. He has become a tonsil mechanic, an adjuster of adenoids or an inspector of gonorrhea."

EDGAR W. BEDFORD, M.D.

**SURGICAL DISEASES OF THE GALL-BLADDER, LIVER AND PANCREAS AND THEIR TREATMENT.** Moses Behrend, A.M., M.D., F.A.C.S. 278 pages. 101 illus. and plates, 6 tables. Cloth, \$4.00. Philadelphia: F. A. Davis Co., 1927.

The striking feature of this well-written volume is the discussion and portrayal of the variations in the anatomy of the ducts and blood vessels in the region of the foramen of Winslow. There are 38 drawings illustrating these variations. All surgeons will appreciate the need of keeping these variations in mind when operating on the bile ducts.

In the chapter on the surgical treatment of gallbladder disease special emphasis is placed on the importance of good exposure and other means of avoiding injury of the hepatic artery and the hepatic and common bile ducts. The problem is further emphasized in the last chapter, on the results of ligation of the hepatic artery in animals and in man. The book is well worth

repeated perusal by anyone interested in the surgery of the biliary system.

THEODORE H. SWEETSER, M.D.

**EXAMINATION OF CHILDREN BY CLINICAL AND LABORATORY METHODS.** Abraham Levinson, B.S., M.D. 2nd edition. 192 pages. Illus. Cloth. \$3.50. St. Louis: C. V. Mosby Company, 1927.

This text contains fairly complete suggestions for the collection of clinical and laboratory data from children. The subject matter is well arranged and well classified. The book is essentially an up-to-date guide to be used in the study of diseases of early life and the ideas presented herein will be helpful to all having to do with diseases of this period.

L. R. CRITCHFIELD, M.D.

**THE HUMAN BODY IN PICTURES.** Jacob Sarnoff, M.D., 112 pages. \$2.00. Brooklyn, New York: Phys. & Surg. Book Co., 1927.

This little book is intended for use in collaboration with a visual text of a series of motion picture films, but the printed matter will contribute very little to the pictures. It consists of a bare recital of the various structures of the body arranged according to systems, and, in spite of its brevity, a feeble attempt is made to describe pathologic conditions and physiologic processes. The illustrations are small and many of them are not clear. It is merely a little manual of anatomy, physiology and pathology, too brief to be of any real value in the teaching of these subjects.

MARGARET WARWICK, M.D.

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**EXPERIENCED PHYSICIAN** desires good location in tourist section of Northern Minnesota. Locum tenens work or assistantship to busy physician considered. Registered in Minnesota. Available at once. Address C-160, care MINNESOTA MEDICINE.

**NOTICE:** An elderly gentleman by the name of Flake has been reported to have been calling on members of the profession offering to repair surgical instruments. About September 1, 1927, this gentleman was given a pair of Robeton obstetrical forceps to be replated by Dr. G. S. Wattam, Warren, Minnesota, and nothing has since been heard of him. Dr. Wattam is anxious to obtain possession of this pair of forceps and would be pleased to purchase them from any physician who may have obtained them from this travelling salesman.

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## PROTEIN THERAPY IN OPHTHALMOLOGY\*

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IN the treatment of inflammatory diseases of the eye, the injection of foreign protein intramuscularly, subcutaneously or intravenously has been established as an efficient and relatively safe procedure. The generally accepted indications for its use are (1) acute or subacute local infections about the eye, (2) chronic constitutional or systemic diseases with secondary inflammation in the eye or adnexa, and (3) prophylaxis. The dangers of its use and the contraindications are probably not so well understood or so generally agreed upon.

The kind of protein to be used, and the amount and the frequency of administration, are questions on which there are differences of opinion among clinicians, but it is hoped that they may be settled by many well-controlled observations. The administration of pharmacologic agents in combination with proteins introduces a complicating factor, and the way in which proteins act under such conditions is not quite clear; clinicians are convinced, however, that the combined treatment is effective and satisfactory in certain conditions, and its field of usefulness is rapidly widening.

Anaphylactic shock or severe reactions seldom occur if the proper dosage of proteins is observed. Tests for protein sensitization can usually be carried out before the injections are given. The best results from protein injections are obtained if a moderate rise of temperature (101 to 103°) and mild leukocytosis (12,000 to 18,000 cells) follow in from six to twelve hours and disappear before twenty-four hours. The rarity of severe reactions following the wide clinical use of serums, milk, vaccines, and other

biologic preparations is the best evidence of the safety of the treatment. With the precautions that can be taken, the danger of anaphylaxis or severe and undesirable reaction is reduced to a minimum.

For the sake of clearness in presenting the matter I will consider the indications for the use of (1) specific protein, (2) nonspecific protein, and (3) combined protein and pharmacologic agents.

Specific protein is employed in the treatment of infections about the eye caused by a known agent for which a specific vaccine or other biologic preparation is available. The list of specific proteins is not large, but includes tetanus antitoxin, diphtheria antitoxin, autogenous vaccines, tuberculin, and others less commonly used. The indications for their use are quite definite and the amounts to be given have been determined for standardized preparations. Many of the specific proteins are used as nonspecific protein because of the ease with which they may be obtained; while the dosage is no different, the results obtained are not so decisive. Autogenous vaccines, prepared under conditions that make it certain that the infecting organism responsible for the disease is used, are most efficacious in the treatment of acute local infections and provide relative immunity as well. Styes, chalazions, and corneal ulcers react most favorably to autogenous vaccines, while chronic conjunctivitis, blepharitis, and eczematous dermatitis are less favorably affected. Autogenous vaccines are used in the treatment of diseases of the eye due to focal infection. Such diseases usually do not produce pus and are not accompanied by a noticeable systemic reaction. The vaccines are prepared from organisms obtained from foci about the teeth, tonsils, or genital or-

\*From the Section on Ophthalmology, Mayo Clinic, Rochester, Minnesota. Read before the Southern Minnesota Medical Association, Austin, Minnesota, September 30 and October 1, 1927.

gans, after passage through animals has shown which of the many organisms obtained may be considered pathogenic. Rosenow has demonstrated that some form of streptococcus is most frequently found in foci causing metastatic diseases of the eye. Clinical experience with vaccines made from the streptococci, proved by his method to be pathogenic, shows conclusively the value of specific vaccines.

Infections by organisms for which no specific antitoxin is available should be treated as systemic diseases with nonspecific protein. Organisms which give characteristic blood tests, such as *Bacillus tularensis*, may produce pronounced general disturbances and severe ocular inflammation, but as yet no specific remedy has been prepared. Local infections are commonly caused by cocci or mixed organisms which are of low virulence and produce no systemic change. If the infection is acute, such as serpiginous ulcer of the cornea, there is little difference in the results after the injection of diphtheria antitoxin, milk, typhoid vaccine, horse serum, or the serum of man. The systemic reaction to any of these proteins brings about a change in the healing of the ulcer. Chronic infections of the lids, cornea, or uveal tract, however, respond more readily and more satisfactorily to milk, but in some instances, when milk has not brought about the desired change in healing, better results can be obtained by the administration of some other protein. The continued use of one form of protein is often not so effective as the substitution of another. For instance, after four injections of 10 c.c. of milk no further beneficial effects can be obtained by its use, but some other protein, such as diphtheria antitoxin, will bring about a new stimulation of healing. In other words, after one form of protein is no longer effective, another form can be administered which will be as effective as the first dose of the previous protein. This is illustrated by the effectiveness of autogenous or stock vaccines in certain chronic diseases of the eye after milk or typhoid vaccine has ceased to be of value. The choice of a protein is determined somewhat by the extent of the general reaction it is capable of producing and the relative safety with which larger doses of it may be given.

The nonspecific proteins used most often in ophthalmology are diphtheria antitoxin, milk, and typhoid vaccine. They have the common

property of producing fever, leukocytosis, and malaise. When any of them is given in dosage sufficient to produce a reaction with a fever of from 103° to 104°, inflammatory symptoms quickly subside, pain is relieved, and a marked change comes about in the disease. Subsequent doses are usually followed by a less marked general reaction, although healing may continue without interruption. The total benefit of milk injections is usually obtained if four injections of from 5 to 10 c.c. are given at intervals of from forty-eight to sixty hours; two injections of typhoid vaccine are usually sufficient for good results, and diphtheria antitoxin should be given in moderate doses (2,000 to 5,000 units) daily for as long as desired. Injections of horse serum or human serum are usually not repeated, and never more than a second or third time. Systemic reactions from the use of vaccine are not desirable. Mild focal and local reactions are all that should follow any injection. The dose should be increased gradually if the reaction falls short of this requirement. Marked reactions from autogenous vaccines usually aggravate the disease and delay recovery. In chronic diseases, in which there are no systemic symptoms and only mild local symptoms, the use of vaccines, without previous administration of other forms of protein, seems to give the best clinical results. Protein therapy should seldom be used during the acute stage of abscess of the orbit with marked general disturbance. After the reaction to an acute infection has passed, small doses of nonspecific protein may be given to advantage if convalescence is slow or unsatisfactory. In milder infections large doses of foreign protein are used. In a case of panophthalmitis due to penetration of the eye by a foreign body (probably iron), in a boy of twelve whom I recently treated, the reaction receded quickly although the globe was filled with pus and the eye was held tightly closed by marked swelling of the orbital tissues and the swollen lids. Although the globe subsequently ruptured, the swelling had gone down during the four-days course of treatment and the boy was comfortable instead of prostrated and in severe pain, as is so often the case.

Local diseases of a nonsuppurative character may yield to some form of nonspecific protein therapy, although the indications for such treatment are not so clear and the results less decisive.

Tuberculosis of the eye may be treated by injection of tuberculin or by radiant energy; in both cases the result probably depends on protein reactions. In general the degree of reaction to protein injection is governed by the severity of the infection for which it was given; the more acute the infectious process the more active the induced reaction. Accordingly, the dosage must be graduated to meet the condition; a large dose of protein must be used to combat an acute infection developing rapidly, a small dose for the more insidious infections. Acute corneal ulcers respond quickly to from 5 to 10 c.c. of milk, or from 1,000 to 3,000 units of diphtheria antitoxin, whereas chronic ulcers should, as a rule, be treated by smaller injections of proteins, from which less reaction is obtained. Vaccines are to be preferred in this type of case to milk or diphtheria antitoxin.

Local treatment of infected eyes is not to be supplanted by protein therapy but rather aided by it. There are very few inflammatory diseases of the eye in which the local use of drugs and heat is not indicated. General protein reactions aid materially in the healing of infected wounds, but antiseptics must be used locally. Application of heat often hastens the healing induced by the injection of protein. Modifications of the usual dosage of drugs given for their general action may also be used. Eyes affected with corneal ulcers should be treated by atropine and heat, and bandaged if the secretion is not profuse. An-

tiseptics, such as bichloride of mercury, mercuriochrome, silver salts, and iodoform, are indicated in cases of sloughing ulcers and should be used in addition to protein therapy. For nonsuppurative corneal diseases, potassium iodide, salicylates, mercury, iron, and many other drugs are given internally. In many diseases of the uveal tract, such as iritis and choroiditis, only atropine and rest are required in addition to the removal of the cause of the disease and protein therapy. Proteins of low activity are used except in cases of acute inflammation. Chronic iritis with posterior synechia and contracted pupil may be made worse by a severe protein reaction. Uveitis may be induced in a healthy eye by the injection of lens protein or uveal pigment. These proteins should be used only after tests for sensitization have been made.

Foreign proteins that produce marked reaction, such as milk, diphtheria antitoxin, and special biologic preparations, should be used only in a hospital where suitable care can be given the patient. Usually the course of treatment is short, but the advantages of the few days of hospital care are sufficient to warrant the extra expense incurred. Vaccines and other proteins producing mild reactions can be safely given to ambulatory patients, but the patient should refrain from strenuous work and obtain as much rest as is consistent with the demands of his activity. When properly carried out, foreign protein therapy is a valuable adjunct to the therapeutic armamentarium in ophthalmologic practice.

## WHAT PRICE LUXURY: THE TOLL OF MODERN HOUSING

W. W. LEWIS, M.D., F.A.C.S.  
*Saint Paul*

DEAFNESS, or hard hearing, though not common nor frequent among all creatures, is becoming so among humans of modern civilization in regions of decided seasonal temperature change. And though to the ordinary, unthinking person not so afflicted it seems not the greatest impediment in life, yet to those who become deaf it is frequently the most depressing and hardest of all afflictions to bear. Blindness would be pronounced by all the greater affliction, yet it is a universally known fact that the blind are happy and cheerful as compared with the deaf, and in the majority of cases develop even buoyant and companionable dispositions; whereas the deaf, unfortunately, only too often drift into silent, morose isolation. Recall, as many of us can, the blind horse or dog of our childhood, how affectionate and companionable he was, and, again, the dear old family dog in his old age, not blind but "stone deaf," as we used to say, how silent and separate and alone he became as his deafness increased.

Complete or absolute deafness is rare, and is seldom seen even by the physician in that special line of practice. Hard hearing, on the other hand, covers all but a mere fraction of so-called deafness, cases of complete or absolute deafness being practically limited to the few apparently born with that defect in their central nervous system, or, which is more commonly the case, those who as a result of meningitis or other brain disease or brain injury before, during or following birth have the auditory or hearing centers in their brains destroyed. Absolute deafness is always a central or brain defect, whereas the vast majority of hard-hearing cases is a matter of crippled sound transmission apparatus in the middle ear primarily, sometimes later affecting the central or brain portion of the hearing organ, but secondarily.

Diseases of the middle ear are by far the greatest in importance, frequency and seriousness, and constitute 95 or more per cent of all ear disease and at least that proportion of all cases of hard hearing. The middle-ear cavity gets its ventilation and atmospheric air-pressure balance through the Eustachian tube leading to it from

the back of the nose chambers. Unfortunately it is by way of this same tube that all sorts of infection creep up into the middle-ear cavities from the nose and throat.

The nose and throat, as can be easily understood, therefore, are the seat, in the beginning, of most all affections of the ear, both as to inflammatory and catarrhal disease. Some of these affections result in pus formation or abscess in the middle-ear spaces, with partial or nearly complete destruction of drum and the ossicle bones. But by far the most frequent are cases of mere catarrh which stiffens and holds fast by adhesions the ossicle joints and drum membrane almost as if liquid glue were poured into the spaces and allowed to harden. Thus the middle ear, or sound-conducting portion, is the part that suffers in most instances in affections bringing on hard hearing.

On the other hand, even in the presence of considerable middle-ear damage, the inner ear, or sound-perceiving portion, remains grossly intact and continues largely capable of perceiving sound when such sound is carried or conducted to it by routes other than the usual air-conduction route; viz., by bone, or bone-conduction as it is called. That is the reason hard-hearing people continue to hear very satisfactorily through the telephone receiver and radio receivers, and why a sounding board, such as a celluloid plate or a celluloid fan, held against the teeth affords wonderful means of collecting sound for transmission through the bones of the head to the inner ear, or sound-perceiving portion, which, in turn, passes it on to the centers of recognition and memory in the brain proper.

Inner-ear deafness, or failure of the sound-perceiving portion, while it does accompany a few forms of middle-ear disease, is largely the effect of toxins, or poisons, in the general system and circulation in the body as a whole. These poisons may be from excessive use or overdoses of common drugs; such as quinine, salicylate of soda and many other chemical substances; but they are more commonly the result of toxins, or poisons. Then, too, the inner-ear apparatus may be destroyed by hemorrhage, as in apoplexy

or hemorrhage occurring in blood diseases, such as the severe anemias. All special sense nerves—such as the nerves of sight, hearing, smell, etc.—are peculiarly susceptible to the poisons mentioned.

We have determined that all but a small fraction of hardness of hearing comes as a result of middle-ear affections, and that practically all middle-ear affections are the result of affections of the nose and throat, due to the close connection of the two through the air tubes reaching from the back chambers of the nose to the middle-ear spaces inside the eardrum.

What, then, are the nose and throat affections which cause so much trouble? They are two: obstruction and infection. Obstruction interferes with ventilation and drainage of the nasal chambers, and infection leads to disease of these nasal chambers, which without ventilation and drainage brings on all sorts of complications locally and often constitutionally. Obstruction in the nasal passages may be due to bony deformity occasionally, but infinitely more commonly is due to swelling of the lining membrane and soft tissue structures in the nose, thus blocking and interfering with the ventilation and drainage of the chambers communicating with the nostril passages. As a result, infection, which would otherwise be of a slight, transient or even innocent nature, develops into severe, troublesome and only too often chronic catarrh or pus-forming disease. These conditions often extend to the air tubes leading to the middle-ear cavities, and in turn can, through obstruction and infection, reach up and into them with all the attendant and resulting conditions so disastrous to the sound-conducting apparatus.

With the sound-conducting apparatus out of commission, the sound-perceiving portion receives relatively little of the sound waves through the air, and hard hearing results.

Most of our stuffy and obstructed noses are due to the unnatural atmospheric conditions under which we live in regions having severe winter climates. The Architect of the Universe never intended that His creatures should live interchangeably several times a day, and even several times hourly, in temperatures of the arctic circle and the torrid zone, or that we should be transported from Hudson Bay to Bermuda, back and forth, by the mere opening and closing of a door, as we are, atmospherically, by going back

and forth from our steam-heated apartments of 75 degrees above zero to 25 below outdoors. The nose, which is comparable to a highly developed thermostat and radiator constantly on guard to modify the inspired air, can not possibly adjust itself to such repeated and continued variation of temperature, and as a result develops swelling and over-thickened tissues, which are out of proportion to the size of the passages, and obstruction with all its attendant troubles results.

The North American Indian, living in his tent the year round, had but two changes in the atmosphere he breathed, during spring and fall, and of such gradual change that he had no such trouble as our modern civilization brings us. He kept warm with clothing and furs and breathed the air of even temperature.

Nor are we, in the great majority, troubled with as much nose and throat and ear affections in the summer months as we are in the winter, for we live at that time in the same temperature indoors and outdoors. The ordinary nose and throat sufferer is comparatively comfortable outdoors in the cold where the tissues of his nose are shrunken and the ventilation of his head cavities is free and open. Not until he comes into the superheated apartment does his discomfort begin, and the trouble all too certainly, slowly but surely, leads up to a chronic catarrh which eventually reaches to his middle-ear cavities and results in hard hearing.

Our fathers and mothers lived in houses with but one room heated, and made no attempt to continue into winter with their summer clothing. They dressed warmer and lived and worked in an atmosphere more nearly equal indoors and out.

Rational and conservative surgery in the nose of adults when indicated may be the means of much relief to help in ventilation and drainage, but conservation of all nasal tissue possible is essential in this rigorous climate. Removal of chronically diseased tonsils, in order to rid the nose and throat of persistent infection, is called for, and adenoids, when present in children, should be removed on account of the proximity to the opening of the tubes leading up to the ear cavities.

Treatment of the ears proper is, in general, not of much value, for the trouble in the vast majority of cases originates and is present in the nose and throat. Ventilation of the middle-ear

cavities in acute catarrh should be reestablished as soon as possible by corrective measures in the ear tubes and in the back nasal chambers.

Acute abscesses in the middle ear should be drained by puncture of, and drainage through, the eardrum, and when mastoid complication comes on should be handled surgically as may be indicated. Chronically discharging ears, if due to disease in the ear tubes leading to the nose, should be helped by the proper treatment there and in the back of the nose. Where ear discharge is due to bone disease in or about the ear or mastoid, surgery should be done to remove the diseased bone.

In the treatment of deafness and hard hearing, more than in any other affliction that the human family is subject to, prevention is paramount, for cure, after the condition is well established, is not possible, and treatment is most unsatisfactory. Keeping the body as a whole in the best of tone and condition is the most effective means of immunity against colds and like affections of the nose and throat, to which persons of sedentary habits are especially susceptible; and we know that if we can keep free of such affections hard hearing will very seldom be our lot.

Regular, daily outdoor exercise, if not more than three to five miles a day on the hoof, is the best of all. It need not be all at one time, as in one walk. Nor is violent, fatiguing exercise necessary or advisable for those unaccustomed to it.

A cold foot bath, upon rising in the morning, and a dash of cold water on the neck, chest and shoulders, are most fortifying.

Moderate heat in our living quarters of 68 degrees or less will prove no hardship if we begin with such temperature in the fall of each year, and plenty of moisture added will tend tremendously to the comfort of our otherwise stuffy noses. Place water for evaporation in every room that is heated. It is not generally known that dry atmosphere needs to be of much higher temperature to give us the feeling of being warm, whereas a moistened atmosphere of several degrees lower temperature feels equally warm.

Adequate ventilation at all times, day and night, is necessary, and nothing safeguards this better than the old-fashioned fireplace. In some countries it is firmly believed that tuberculosis has markedly increased since the abandonment

of the open fireplace for the more modern central heating system.

Sneezing unguarded by the handkerchief is an ever-present source of danger in disseminating infection, and close proximity to others in crowded street cars and elevators spreads infection through ordinary conversation and breathing.

Hard hearing or deafness of long standing can be regarded almost positively as incurable. In general the damage has been done and can not be undone, and the best we can hope for is to keep the deafness from going any farther by what treatment, medical or surgical, may be rationally indicated. After that we must do the best with the hearing we have left, and learn to call the other faculties we have to help out.

To the Hard of Hearing: First, let us keep up our courage and our spirit. Do not permit ourselves to become morose or to feel isolated and alone. One of the greatest human attributes is companionship. Friendliness begets friends. Be attentive. There is lots we can understand even if we do not hear every word. Do not pretend to hear when you do not, nor answer at random what you may merely guess at as being said to you, for the other person becomes more embarrassed under such circumstances than you do.

Do not permit yourself to be deprived of any helping device of which you may be able to avail yourself. It is far better to hear with it than not to hear or to pretend to hear when you do not. Many of the electrical instruments are wonderfully well received by hard-hearing people. But do not permit yourself to tune it up any louder than is necessary for you to hear by. Save the additional capacity of the instrument in case you may need it later.

Train yourself to lip reading, limiting the practice at first to some dear friend or relative whose patience and sympathy you know is 100 per cent. There are many excellent, capable teachers to be had, and a good start from one of these may speed you along wonderfully.

Become a radio fan, and the whole world will find its way to your ears. Remember that the great majority of so-called deaf people are not deaf but only hard-hearing, and that their bone conduction is even above par. If you could read, as I have read, scores of letters from persons

who have been, during their careers, men and women of national prominence and renown in literature, in art, in business and finance, who, after years of comparative retirement on account of hard hearing, have returned to intercourse

with the world through the blessing of the radio, you would take up the radio earpieces and adopt them as gossiping friends to bring to you the news of the world and help you to become a philosopher and an optimist.

#### ONE STANDARD FOR ALL AMERICA

In 1781, James Watt invented his steam engine and opened the modern industrial era. Only two years later he launched another development of epoch-marking significance—"a perpetual decimal subdivision of weights and measures," as he termed it. This Watt plan became the basis for the world metric standards of today.

In America, Thomas Jefferson evolved a similar plan for decimal weights, measures and money. He secured Congressional sanction for dollars-and-cents currency in 1785; but his earnest urgings, added to those of George Washington, failed to gain establishment of decimal weights and measures.

It was 140 years ago that "The Founders," men of so much breadth and vision, pleaded with our people to adopt and use decimal commodity standards. Since that time, all the other civilized nations have made this advance. Only the United States of America and the British Commonwealths are unstandardized with the world.

#### DIVERSITY OF MEASURES

This is the more deplorable to record, when it is considered that our commodity units are not standardized one with the other. The current impression, unfortunately prevalent, that Americans use the British measures, is the cause of costly confusion in commercial transactions, price quotations, statistics and technical literature. A gallon is not the same in Canada as in the United States, nor is the bushel. There is great confusion due to the different tons and hundredweights, the "long" ton being generally used in British countries. Even the technical definition of the yard is declared to be different in various English-speaking countries.

Because of the 20 per cent difference of the pint, quart and gallon in Canada and the United States, the U. S. liquid measures have been made illegal for use in Canada, for American merchants might otherwise sell with their smaller liquid units and gain an unfair advantage.

The Canadians have what was known of old as the British beer measure. The United States uses what was

known in antiquity as wine measure. Both were no doubt very actively in use when our disorderly weights and measures were being framed, for, as Joseph V. Collins declares, "Counting English and Canadian units bearing the same names as United States units, we have in use 4 different sizes of pints, quarts and gallons; 3 different sizes of gills, many sizes of barrels; an untold number of different sizes of bushels of things as sold in different States, such as apples, potatoes and the like, 3 kinds of ounces, drams and pounds; 2 different sizes of hundredweight; 4 different tons, and 2 or 3 kinds of miles." To this anarchy of weights and measures are to be added such casuals as minims, grains, fathoms, pennyweights, pecks, links, chains, points, lines, mils, scruples, furlongs, hands, rods, poles, stones, cords and other survivals of barbaric barter.

#### PAN-AMERICAN STANDARDIZATION

The unfortunate condition here depicted, while as yet unamended, by no means has passed unnoticed. Economic experts have for years pointed out the tragic waste involved in our unstandardized, undecimalized measure.

Particularly in America has been proclaimed the need for unification of commercial standards. Sensing this desperate need, the first Pan-American Conference, held in Washington, D. C., declared in one of its most important agreements: "The Conference recommends the decimal metric system to the nations which have not already adopted it."

As a result of that conclusion, all republics of Central America, South America and the West Indies by legal enactment confirmed the adoption of the metric units. Our great Secretary of State, James G. Blaine—founder of the Pan-American conference plan—urged favorable action from the United States Congress, likewise suggesting as a first step the use of metric standards in the customs service. But, though official support was accorded and at one time metric legislation failed by a very narrow margin in Congress, no definite action was taken, and in this vital advance the United States lagged behind other republics not ordinarily considered so progressive.—*The Kiwanis Magazine*.

## CONTRACTURE OF THE AXILLA FROM BURNS: REPORT OF THREE CASES\*

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I SHALL not discuss here the surgical treatment of the various types of contracture of the axilla due to burns, since each case presents an individual problem, but I shall describe the conditions met with in three cases, and their treatment.

Individual as the problems are, there are a number of general indications by which one should be guided to a certain extent. Consideration must be given first to the severity of the scarring and the degree of contracture. Patients who come to the surgeon for relief are rarely burned deeper than the skin and subcutaneous fat; for the superficial burns do not cause con-

may come through the pedicle after the flap has been separated from the underlying tissues to prevent sloughing. Also the intense scarring may interfere with the elasticity of a flap to such an extent that the flap will not assume a satisfactory shape for filling in the defect after the deformity of the shoulder has been corrected. In such cases, if it is not possible to shift a flap safely, and if the flaps are not sufficient to cover the defect after excision of scar tissue, and to correct the deformity, it is comforting to know that the free, full-thickness skin transplant may be relied on to cover the remaining area.

The severity of the scarring will determine the



Fig. 1, Case 1. Axillary scar contracture involving posterior axillary fold.



Fig. 2, Case 1. Correction gained by Z plastic operation, tendon lengthening, and physiotherapy thirty-nine days later.

tractures that require surgical treatment, and deeper burns are usually fatal. If the scarring has resulted in an extensive web from the arm to the chest, which consists of relatively elastic, pliable skin, it may be possible to correct the deformity almost entirely by plastic measures (Case 1). For several reasons intense scarring may make the available tissue unsuitable for flaps. Because of poor circulation it may be hazardous to shift flaps, since not enough blood

operative procedures that may be necessary to secure the desired result. The deformity may be too marked to permit correction by one operation. The muscles, ligaments, nerves and blood vessels have become shorter and thus the joint motion has been limited for a prolonged period. The muscle contractures may be relieved by lengthening the tendons, while the other tissues may be gradually accustomed to wider excursions of shoulder motion. After the first operation, which is likely to be the most radical, remaining contracted areas may be corrected at successive intervals by excising them and sub-

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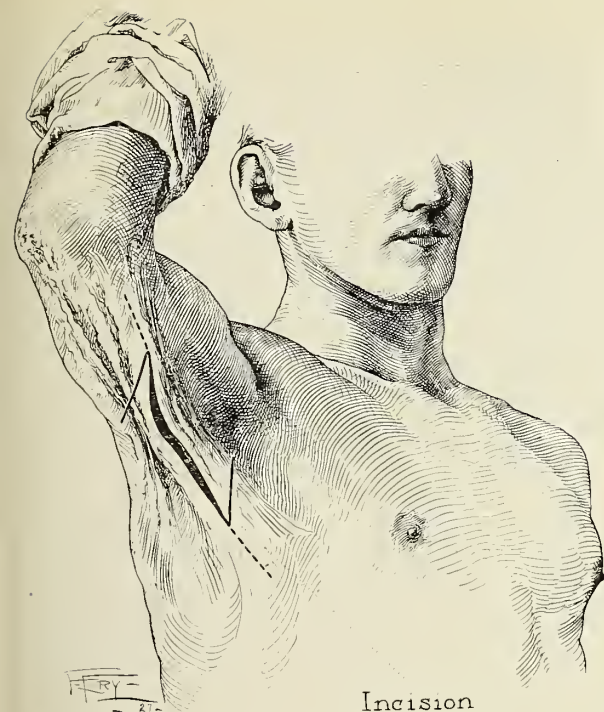


Fig. 3, Case 1. Contracture of posterior axillary fold showing incision for Z plastic operation.

stituting free, full-thickness skin grafts (Case 2).

If the severity of the scarring has been misjudged and plastic operation has resulted in sloughing, the necrotic tissue may be excised and the area prepared for a full-thickness skin transplant (Case 3).

Consideration must also be given to the site of the contracture: whether the anterior axillary fold is involved, as in Case 2, whether the posterior fold is involved, as in Case 1, or whether the entire axilla is involved, as in Case 3. It is fortunate that the body is not usually burned on both front and back at the same time, since the scarring then principally involves only one or the other of the axillary folds. Also, the axilla, being protected by the arm, is often spared and the good skin in this area can be used in the repair.

#### REPORT OF CASES

**Case 1.**—A man, aged twenty-one years, presented himself for examination with a contracture of the posterior axillary fold resulting from scalding with hot water eighteen years previously. Figures 1 and 2 show the range of motion before and 39 days after one operation. The web was extensive and fairly elastic and it was possible to gain almost complete relief by the "Z" plastic operation, which Davis calls "Berger's web-splitting operation." Figure 3 shows the incision used to split the web and provide anterior and posterior flaps. Figure 4 shows the dissection of

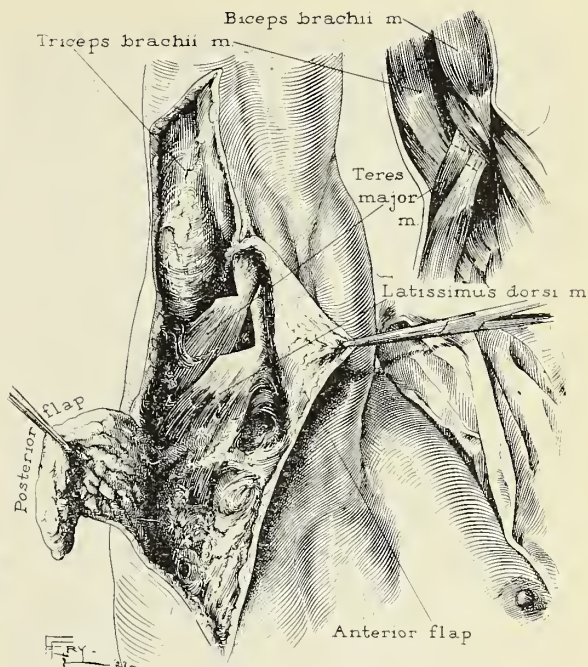


Fig. 4, Case 1. Dissection of anterior and posterior flaps in Z plastic operation together with lengthening of tendons of teres major and latissimus dorsi.

the flaps: the anterior flap is attached to the arm and the posterior flap to the chest. There was enough elasticity in the flaps to permit considerable change of shape when the arm was abducted. In order to abduct the arm fully, it was necessary to excise the scar tissue in the axilla and to release the tension on the teres major and latissimus dorsi muscles by cutting the band-like tendons about two-thirds across (Fig. 4). After

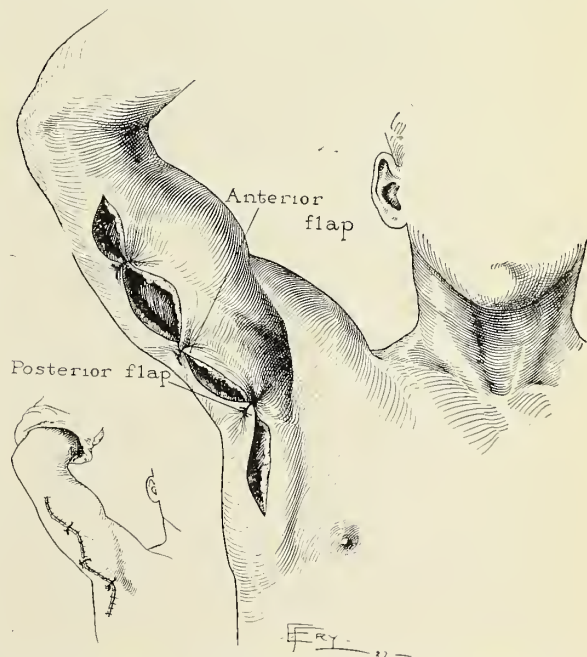


Fig. 5, Case 1. Approximation of flaps in Z plastic operation. Insert: the completed suture.



Fig. 6, Case 2. Axillary scar contracture involving anterior axillary fold.



Fig. 7, Case 2. Relief of contracture sixty days after plastic operation, tendon lengthening, and full-thickness skin graft at time of primary operation. The small, circular, full-thickness graft was applied at a secondary operation because of necrosis resulting from an ill-fitting splint. A plastic operation relieved a contracture in front of the left elbow, and a pedicle graft from the abdomen to the left forearm relieved a forearm-thumb contracture.

the flaps had been trimmed to fit the defect, the wound was approximated as shown in Figure 5. The incision was carried down onto the arm two-thirds of the way to the elbow in order to excise the dense, thick bands of scar tissue. Following the operation a copious dressing of fluffed gauze was bandaged into the axilla and a plaster-of-Paris cast extending over the body and down to the hand was applied. The cast held the arm in abduction and exerted gentle pressure on the operative field. It was left on for eighteen days and, following its removal, baking, massage, and active exercises were instituted to restore function. Hanging from a horizontal bar seemed to be a helpful exercise for maintaining the extreme of abduction. The cast was cut off in such a manner that it could be reapplied as a plaster *aéroplane* splint to hold the arm in abduction while the patient was up and about. The splint was used for several weeks longer.

*Case 2.*—The patient was a woman of thirty-three, who had been burned severely about seventeen months previously. Among other deformities a severe contracture of the anterior axillary fold had resulted. Figures 6 and 7 show the range of motion before and 60 days after operation. However, the arm could be raised forward to the level of the shoulder. The scarring and contracture were so marked that closure of the entire wound, following surgical relief of the deformity, was out of the question. The fact that the posterior axillary fold was not severely scarred and the main part of the vault of the axilla posteriorly had been spared was favorable. Figure 8 illustrates the type of incision used. After separating the arm from the chest, it was seen that a short anterior flap

and a more extensive posterior flap could be obtained. Figure 9a shows how the anterior and posterior flaps were used to cover the defect over the chest only; the defect over the inner side of the arm in the axilla was disregarded for the time being. Owing to the limited range of shoulder motion, the pectoralis major had become shortened, and in order to abduct the arm fully it was necessary to cut the band-like tendinous insertion transversely through about two-thirds of its extent (Fig. 9a). To cover the defect on the arm, the free, full-thickness skin transplant was used. By means of a rubber-tissue pattern, a graft devoid of fat was removed from the thigh (Fig. 9c). This graft was sewed into place on the arm with numerous mattress sutures to effect accurate approximation (Fig. 9b). The mattress sutures helped to increase the tissue contact at the skin margins. Allowance was made for this eversion of the skin margins by cutting the graft slightly larger than the actual defect, somewhat after the method of Blair. It was possible to close the wound on the thigh after some of the excessive subcutaneous fat had been excised. "Pie crust" stab wounds in the skin afforded further relaxation. A copious dressing of fluffed gauze placed over the graft was held in place by a plaster cast extending over the body and down to the hand of the affected side, to hold the arm in abduction. While the plaster was hardening, gentle pressure was exerted over the dressing. Although I have not used the rubber bags advocated by Smith, by which he maintains a pressure of

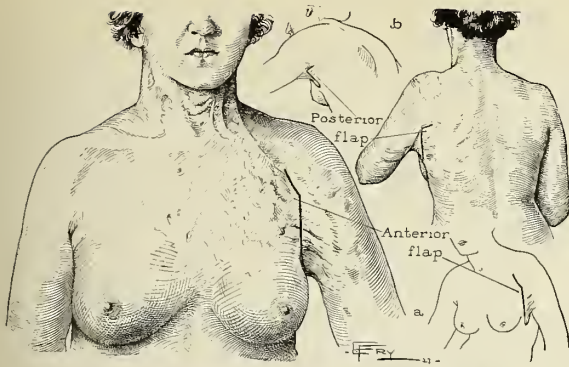


Fig. 8, Case 2. Incisions used to release contracture involving anterior axillary fold. *a*, Anterior view of incision showing proposed anterior flap. *b*, Posterior view of incision showing proposed posterior flap.

30 mm. on the graft, I like the idea and plan to try it. The graft in this case showed an excellent primary "take" when first inspected thirteen full days after operation. Local heat, massage, and exercise were instituted about three weeks after the operation. Unfortunately a small area of necrosis developed from undue pressure of an ill-fitting splint, and accordingly one month following the first operation, after cauterizing the ulcer with phenol and sponging locally with 95 per cent alcohol, the ulcer was excised together with some scar tissue leading up toward the neck, and a full thickness graft was applied. This graft grew satisfactorily. It is represented by the smaller circular graft in Figure 7.

**Case 3.**—A boy aged six years had been burned three years previously, and contracture of the axilla had resulted (Fig. 10). The anterior axillary fold, as well as the posterior fold, was scarred. Because of a fairly extensive web, a "Z" plastic operation was attempted and closure of the wound was effected. The scar tissue present, however, was not sufficient, and sloughing appeared in the axilla. I refer to this case to show again to what extent the free, full-thickness skin transplant can be relied on. On the twenty-fourth day following the primary operation, the area of sloughing was excised, and, by allowing the defect to gape, further correction of the shoulder was possible. Hychlorite dressings (diluted 1:7) were applied in the meantime. After four days a free, full-thickness graft was sewed into place with excellent result. It is represented by the diamond-shaped area in the axilla shown in Figure 11, which also illustrates the range of motion, forty-six days after operation. Physiotherapy was employed to restore function after operation.

#### SUMMARY

Each contracture of the axilla presents an individual problem. In planning the proper mode of attack, one must be guided by the severity of the scarring, the available arm-to-chest web, and the site of the contracture, whether in the anterior axillary fold, the posterior axillary fold, or whether the entire axilla is involved.

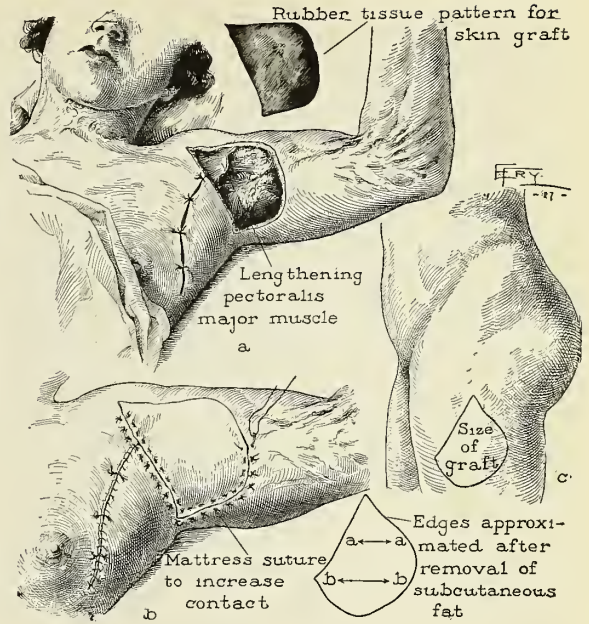


Fig. 9, Case 2. Relief of contracture involving anterior axillary fold. *a*, Anterior and posterior flaps used to cover side of chest, leaving medial surface of upper arm uncovered. *b*, Full-thickness skin graft used to cover defect. *c*, Outline of full-thickness graft made on thigh using rubber tissue pattern of arm defect. Thigh wounds closed after removal of considerable subcutaneous fat and undercutting the skin edges.



Fig. 10, Case 3. Scar contracture involving entire axilla, especially the anterior part.



Fig. 11, Case 3. Relief of contracture by Z plastic operation and a secondary full-thickness skin graft following excision of area of sloughing. Appearance forty-six days following primary operation.

A series of operations is usually necessary to obtain the best result. The free, full-thickness, homogeneous skin transplant is a reliable procedure to fall back on if, after full correction of

the shoulder deformity, not enough skin is available to effect a plastic closure.

The full-thickness skin graft may also be used to fill in a defect left by postoperative sloughing of the skin in the axilla. There are a few requisites for success in using the free, full-thickness skin transplant: (1) its use only in an uninfected field; aseptic sloughing of the skin is not a contraindication; (2) in preparing the field for the graft, excision of the scar down to normal vascular tissue; (3) if possible, suturing the graft to the skin which has not been scarred; (4) cutting the graft by pattern to fit the defect accurately; (5) maintaining the proper degree of even pressure; (6) the use of a plaster-of-Paris cast to aid in maintaining moderate pressure on the graft, to bring rest to the field of operation, and to maintain correction of the deformity; (7) not inspecting the graft for ten days after operation, and (8) maintenance of moderate pressure on the graft for three weeks after the operation.

Physiotherapy is of use before operation to loosen scarred skin and to improve its pliability; after correction of the adduction deformity at the shoulder it aids in the restoration of joint function.

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## SOME PHASES IN THE DIAGNOSIS AND TREATMENT OF MAXILLARY EMPYEMA\*

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WRIGHT, in his History of Rhinology and Laryngology, relates that Egyptian kings, as far back as 3500 B. C., suffered from acute and chronic rhinitis and other forms of pathology in the nares. He tells of King Sahura honoring his private physician by causing the royal stone cutter to inscribe on a slab his deed of curing the king of an infection in his nose.

From that time until the present, the human race has suffered from variable infections and pathological processes in the nose and upper respiratory tract. Formerly, and even rather recently, these were considered some form of rhinitis; possibly an acute rhinitis, a hypertrophic rhinitis, or an atrophic rhinitis, and treatment was prescribed accordingly. At present, any such pathology in the nose is considered a manifestation of some accompanying sinus disease. Some one has very accurately stated this by saying that the nasal mucous membrane is the "show window" of the sinuses. At least, every rhinologic study should have for a basis the study of the nasal accessory sinuses.

In taking up some of the phases in the diagnosis and treatment of acute and chronic conditions of maxillary empyema, I wish first to emphasize the importance of a thorough knowledge of the anatomy of the sinus, not only the developmental, but also the completed topography. A rhinologist must always be on the lookout for anomalies and must know the anatomical limitations.

The adult maxillary sinus is the largest of the paranasal sinuses, except in very exceptional cases, where it is comparatively small and exceeded by the frontal and sphenoid sinuses. It follows the shape of the body of the maxilla, resembling a three-sided pyramid. The walls vary in thickness and dehiscences have been noted on the facial or ventral wall. The relation of the floor of the adult maxillary sinus to the floor of the nasal fossa depends largely upon the

degree of hollowing out of the processus alveolaris of the maxilla. The degree of arching of the hard palate, affecting the floor of the nose, also has some bearing on this relation; usually, however, the floor of the sinus is below the floor of the nose. The difference in height varies from .5 to 10 mm. I have been unfortunate in encountering a case in an adult where the floor of the antrum was so far above the floor of the nose that, upon puncturing, the point of the trocar went into the cheek instead of into the cavity. The reason was found after a thorough study of the skiagram.

The relationship of the teeth to the maxillary sinus in the adult is important, because about 15 to 20 per cent of infected antra are due directly to alveolar abscesses, either by contiguity, or accidentally by the extraction of abscessed teeth. This is due to their close proximity to the floor of the sinus. The layer of spongy bone between the roots of the teeth and the floor of the sinus varies in thickness in different skulls and the asymmetry on the two sides of the same skull is often very marked. A patient may have an accidentally infected antrum on one side following extraction, while on the other side he may encounter no such difficulty, owing to the unequal development of the two sides of his skull. The relationship of certain teeth to the sinus is also not constant, because of the variance in size of the sinuses, not only in different individuals, but often in the same one. Direct communication between the roots of the teeth and the mucous membranes of the sinus occurs most frequently in the aged; it does not occur in the young adult.

The function of the maxillary sinus and that of the remaining nasal accessory sinuses is a much discussed question among the profession and the laity. In reviewing this phase, a wide variation is found in the different text books. Their hypotheses and conclusions are markedly dissimilar. The only plausible theory, of the several held by various authors, is that the maxillary sinuses are invaginations, rather than evaginations, as we have previously been taught. In

\*From the Department of Ophthalmology and Otolaryngology, The Nicollet Clinic, Minneapolis, Minnesota. Read before the annual meeting of the Southern Minnesota Medical Association, Austin, Minn., Sept. 30 and Oct. 1, 1927.

other words, they are drawn in, instead of pushed out. This theory has probably led most rhinologists to the belief that conservatism should be of the utmost importance in the care of the sinus in the young, while the more radical procedures may be initiated in the adult. This, in my opinion, is certainly not justified, and conservatism should always be the rule in the treatment of sinus conditions, as in all types of nasal surgery.

Inflammations, infections and hyperplastic changes in the antrum are of much greater frequency than in the other sinuses.

The etiology of acute and chronic maxillary sinusitis involves many factors. The classification of Skillern is as follows:

1. Idiopathic (arising in the sinus itself).
2. Direct extension from nasal mucosa (coriza, etc.).
3. Infectious diseases (circulatory).
4. From alveolus (contiguity-blood; continuity-bone).
5. Contamination from other sinuses.
6. Foreign bodies.
7. Osteomyelitis, tuberculosis, syphilis and malignancy.
8. Chronic or latent empyema.

For the sake of brevity, we will not discuss the idiopathic cause, as direct bacterial invasion of the sinus is almost impossible to demonstrate.

The extension from the nasal mucosa is easily possible, because, whenever the mucous membrane of the nose is affected, the mucosal lining of the sinuses is always secondarily affected. This route of infection is unquestionably the most frequent.

It is not known why influenza, of all the infectious diseases, should play the most important rôle as the causative factor of maxillary disease, unless the comparatively recent epidemic has taught rhinologists the importance of a more rigid and careful investigation, with a resulting increased knowledge of the pathology of this sinus.

Many authors state that alveolar infections are the causative factor of antrum disease in 20 per cent of the cases. This percentage, in my opinion, is rather high. Permit me at this point to ask the question, why is alveolar extension to the antrum by contiguity comparatively common, while the reverse occurs rarely, if at all? My only explanation is hypothetical, and is that

the mucous membrane of the sinus is very resistant to infection. For this reason, its conservation should be seriously considered when contemplating any radical interference with the sinus. This would also lead one to believe that the actual bone changes, if any, occur only in a late stage of the disease.

It is easily possible for extension from other sinuses to produce maxillary sinusitis. The maxillary sinus, because of its anatomical position, size of the ostium, etc., is in the greater number of instances the first sinus to be infected. This is true not only of acute and chronic infections, but also of the state of hyperplasia. Therefore, in cases of recurring nasal polyposis, after the overlying sinuses have been exenterated, the possibility should not be overlooked of the primary pathology existing in the antrum at the time of surgical interference with the other sinuses.

Osteomyelitis, tuberculosis and malignant tumors will not be discussed. A primary syphilis has never been reported but I want to mention a case in this connection which has come under my observation during the past two and one-half years. The patient, a male of forty-one years, had a bilateral maxillary empyema and a coincident positive blood Wassermann. Both responded nicely to antispecific treatment and antral lavage. One year later he had a recurrence of an acute bilateral maxillary infection combined with a lower respiratory infection, and, in spite of a persistently negative Wassermann, he was put upon antiluetic treatment and the empyema cleared up. This would seem to indicate some hematogenous effect of syphilis upon the maxillary antrum when empyema is present.

The *symptomatology* presents both local and general manifestations, not only in the adult, but also in the very young. The first local subjective symptom of an acute empyema is usually pain, especially if of dental origin or following an attack of influenza. The sensation is usually most marked in the region of the frontal process of the superior maxilla. It varies from a constant, dull feeling of pressure to one that is severe and neuralgic in character. Often these patients have an irritation of the superior dental nerves as the first manifestation and therefore visit their dentists. Frontal pains are sometimes noticed with an acute empyema of the sinus, but I believe this to be due to some involvement of the other sinuses of the anterior group, ethmoid

or frontal. Pain is increased by bending forward. After the empyema of the antrum has reached the so-called chronic stage, there is no pronounced pain. If it exists at all, it is of a diffuse and undetermined character. Patients will sometimes describe it as "dizziness," and in this connection permit me to urge a thorough sinus investigation in every case of dizziness of undetermined cause.

The second local symptom of which the patient complains is usually a discharge from the sinus. It is copious, and variable in character. There may be no odor to the discharge, but it is sometimes very penetrating, especially if the disease is of dental origin. People who complain of a constant "cold in the head," or those who "catch cold easily" should by all means have a thorough rhinologic and sinus study made. This discharge may present three chief characteristics: it may be mucoid, muco-purulent or purulent. Often there is no anterior discharge and the patient denies any disease of the nasal cavity but concentrates on symptoms of the pharynx and larynx. The discharge is usually more profuse in the morning on arising, as the antrum drains best when the patient is in a recumbent position.

The next complaint is usually of nasal "stiffness." You probably have all had the experience of looking into a nose because of this complaint, naturally expecting some septal thickening or deflection. Upon examination you find a marked deflection to one side, but the patient will tell you that he encounters the greater stuffiness on the opposite side. This one fact alone should make you suspicious of some sinus involvement. It is a fixed rule of my own never to recommend a submucous operation to alleviate nasal stuffiness until the sinuses, especially the maxillary sinus, have been satisfactorily eliminated as the cause. This symptom may become so marked that the patient will complain of a degree of dyspnea. The complaint which a patient recently made to me was that, using his own terminology, he could not "expand his chest like he used to." He had visited one rhinologist who irrigated his left antrum, because the findings really pointed to a left-sided involvement, by transillumination and skiagram. The sinuses were pronounced clear and a submucous operation recommended. When he came to the Clinic, I irrigated both antra and found a large amount of pus on the right side. I wish to stress most emphatically the necessity

of utilizing every method of diagnosis at our command in seeking pathology within the sinuses. If all the usual methods of examination are negative, do not hesitate to explore the antrum by puncture if it is at all questionable, especially when searching for focal infection.

There is usually some disturbance of the sense of smell, not only the subjective odor of the discharge, but also, in many instances, an entire loss of this sense. The subjective odor is increased, like pain, when the patient bends forward. It sometimes produces a distaste for food and drink. The loss of smell is due to hypertrophic changes of the mucous membrane around the olfactory fissure, secondary to the disease of the sinus.

In considering the objective symptoms of a suppurative disease of the maxillary antrum, the first thing to note in either one or both of the nasal cavities is the presence of secretion which is either muco-purulent or purulent in character. Its location may be anywhere in these cavities. It sometimes is not visible, however, until the examination of the naso-pharynx has been made, either indirectly by the mirror or directly by the naso-pharyngoscope. Repeated examinations are sometimes necessary, as this sinus is prone to spontaneous evacuation in some cases.

Congestive hypertrophy may exist in the region of the middle turbinate and middle meatus. Nasal polyposis or other hyperplastic changes may be present if the case is of long standing.

*Diagnosis* of the acute type of maxillary empyema is comparatively easy, as the infection is usually ushered in with chill, fever, discharge of pus and facial pain which may be neuralgic in character along the branch of the infra-orbital nerve. These subjective symptoms may also be present following dental periostitis or extraction.

In making a diagnosis of the somewhat obscure or chronic type, a detailed rhinoscopic examination is of the greatest importance, including both an anterior and posterior study. This should be done before and after shrinking and suction are applied. The naso-pharyngoscope is a greater aid in posterior rhinoscopy than the indirect method, after one has become proficient in its use. To the beginner the picture is somewhat magnified and distorted.

The second step in the diagnosis is transillumination, which I am positive has too often been ignored and has not received the consideration

it deserves. This method must be used routinely, with the same intensity of light in every case. Many times in my experience this method of examination has aided me when the skiagram has failed, and vice versa. There are certain things which may affect the illumination, as, for instance, asymmetry in the same or different individuals, because of such anatomical developments as thickness of the bony walls of the antrum or different degrees of skin pigmentation. The mucosal lining of the sinus itself may also affect the illumination. A comparison of the study of the illumination of the frontal sinuses with the clarity of one or both antra is of inestimable value in this method of examination. Any degree of inequality between the antra or between the antra and overlying sinuses should be noted, and the examiner should request an *x*-ray. I do not, however, rely much on the illumination of children under ten or twelve years of age.

The skiagram is the sequel to illumination in the diagnosis of antral disease, not only because of its great diagnostic value, but because it so clearly shows the anatomical development. This latter is important if any degree of interference is to be enacted in a therapeutic capacity. These same two advantages apply to the child, as well as to the adult. It must be remembered, also, that the age of the individual affects the density of the bone. The antero-posterior exposure is of greatest value. Lateral exposure is necessary only when an anomalous anatomical development is suspected. Uniformity of position in exposure is a very important aid to the final interpretation, which should be made by the rhinologist himself.

A rhinologist who is incapable of interpreting his own roentgenograms should never ask for them, because he is often misled by the interpretation of some one who is not familiar with the true clinical picture of the patient. In other words, I wish to emphasize the importance of the correlation of all findings in making a diagnosis of empyema of the antrum.

The final and most conclusive proof of antral empyema is by means of the diagnostic puncture. This procedure is fraught with some dangers, but they are not comparable to the beneficial aid which the puncture affords in diagnosis.

In children, the procedure must usually be carried on under general anesthesia, although a surprising number of children of varying ages can be prevailed upon to submit to local anes-

thesia. (In these instances it is often not only "local," but sometimes "vocal" anesthesia.) The youngest patient upon whom I have made a diagnostic puncture under cocaine anesthesia was a colored child, four years of age, suffering from a subacute multiple arthritis. The operation was performed at the University Dispensary after every other possible vestige of focal infection had been removed, including tonsils and adenoids. Both his local and general symptoms subsided entirely to antral lavage under local anesthesia, and no more radical procedure was necessary.

The ideal and conservative puncture of the antrum is made under the inferior turbinate, at the junction of the anterior and middle third, pointing the needle toward the outer canthus of the eye. Too much pressure should not be exerted and if necessary the mallet is used, because then the penetration is sharper and is not so likely to permit accidental separation of the mucosal lining from the antral wall. Separation has been reported as the cause of some of the dangerous mishaps encountered, such as air embolism. It is obvious, also, that it would not permit the escape of the return flow through the normal ostium.

The return flow following the puncture and irrigation of the acute type, or of an acute infection superimposed upon the chronic or obscure type of antral empyema, is usually copious and presents purulent characteristics. The return flow from the obscure type of antral empyema may contain a mucoid or purulent material or may contain only the often reported "shreds." The contents may appear as caseous material, at times simulating that of tonsillar crypts. This condition tends to liquefy under subsequent treatments. The bloody, cord-like, tenacious type of material is always resistant to treatment.

"Shreds" have not been given their due consideration by most rhinologists, simply because they are not as macroscopic in character as the mucoid or purulent material. Just why they occur, it is impossible for me to satisfactorily explain, unless they are material from the superficial layers of the mucosal lining. However, I have learned to my own satisfaction that these cases must be re-irrigated one to three times, at intervals of six to twelve days. During one of these subsequent irrigations a large infected clot is likely to appear in the return flow, which I

am very certain has proved the existence of an obscure type of empyema. Time does not permit me to cite the first case on which these findings were noted, and how the diagnosis was confirmed by relief of local and general symptoms.

In closing the subject of antral puncture, permit me to emphasize the importance of successive punctures, especially in the absence of any other known focus, remembering that this sinus is very prone to spontaneous evacuation.

We all agree that some form of cannular instrumentation must be used in the treatment of the very young. This may be left in situ for a few days so that there may be subsequent irrigations following its insertion under general anesthesia. Some men attempt window resection under the inferior turbinate. I have always encountered very stubborn resistance in the treatment of sinus involvement of any type in children. All possible chronic head infections must be removed. The rhinologist should have the co-operation of the pediatrician in watching and maintaining a generally healthy physical condition, as this aids in combating the infection. Any general symptom complex arising from maxillary sinus involvement in children responds promptly to the elimination of infection.

In discussing the treatment of the adult antral empyema, either acute or obscure, it would be well first to consider its prevention. Primarily, of course, this would mean the removal of the etiological factors, whether existing within the individual or due to external influences. These factors have been mentioned and the cause and method of their removal are obvious, with the possible exception of the acute cold, which I consider the most influential and which deserves particular mention.

Nature, in establishing a rhinorrhea aided by the normal physiological action of the ciliated nasal mucous membrane, attempts to combat the bacterial invasion by forcing it forward. The best possible aid to nature in this process is shrinking and gently applying suction, instead of the use of the old-time nasal spray. It is very obvious that this method is of greater aid to nature, and therefore a greater prevention of any sinus involvement, than the use of any watery solutions by spray, which are likely to be forced into the sinus and afford excellent culture media.

I sincerely believe that the nasal spray is re-

sponsible for the development of empyema in chronic form, because if used habitually by the rhinologist, he is encouraged by the temporary disappearance of symptoms and neglects to search for sinus involvement, which is the root of the patient's condition. Every acute head cold must be observed with the idea in mind that sinus involvement is possible at any time during the course of active infection and only in this way will we prevent our cases from going to chronicity. Do not procrastinate in the use of lavage as soon as any fluid is recognized in the antrum, as this fluid is an excellent medium for the growth of bacteria. The sooner it is evacuated, the sooner will the mucosal lining return to normal, and as a result less permanent damage will be done.

The intervals of lavage will be regulated by the amount and character of the material found in the return flow. It is sometimes necessary to do this daily. If, after successive lavages, the return flow becomes clear, it is always necessary to follow, after one to two weeks, with a final lavage before you can pronounce the empyema completely cured. This is true of either the acute or the obscure type.

It is imperative that the series of lavages be made through the same opening, producing as little bleeding and traumatism as possible. The blood again backs up into the antrum and forms a culture medium, thereby protracting the disease.

The obscure type of maxillary empyema is sometimes a cause for discouragement, not only to the patient, but to the doctor as well. There are certain stages in its evolution and progress with which the doctor can acquaint himself only by experience in the use of this most conservative method of treatment. I hesitate to use the more radical procedures because they leave the mucosal lining of the sinus more directly exposed to external influences and therefore more subject to re-infection. It is easily conceivable to me that the ostium of the maxillary sinus is so placed because of its greater protection against these external influences, making the sinus less liable to infection. The conservative method of treatment, therefore, leaves a more normal anatomical sinus.

#### CONCLUSIONS

1. Every rhinologic study should have for a

basis the study of the nasal accessory sinuses.

2. In the diagnosis and treatment of maxillary sinusitis, a knowledge of the anatomy is of utmost importance; the rhinologist must always be on the lookout for anomalies.

3. Certain routine steps should always be taken in making a diagnosis of the obscure type of maxillary empyema: (1) a detailed rhinoscopic examination, including anterior study and posterior study with the aid of the naso-pharyngoscope; (2) transillumination; (3) the skiagram;

and (4) one or more successive diagnostic punctures.

4. In the treatment of acute colds, a careful, continuous search for sinus involvement is of the utmost importance, because it will aid in effecting a quicker and more satisfactory cure and prevent the occurrence of any permanent changes.

5. Cases of antral empyema, all etiological factors having been eliminated, will respond to proper antral lavage to the extent of a cure.

### WELDONA: A PIECE OF "RHEUMATISM CURE" QUACKERY

In 1922 it was reported that an adult, with marked jaundice, was dying after continued use of Weldon tablets. At that time an analysis of Weldon had shown the presence of sodium salicylate. In 1924 an analysis showed the "Weldon Treatment" to consist of small, white tablets containing an emodin-bearing extract, and large, lavender-coated tablets containing sodium salicylate and an unidentified vegetable extractive. In 1925, the Boston Medical and Surgical Journal gave some case reports by Dr. Richard C. Cabot in which it was stated that a series of cases of acute yellow atrophy in patients having taken Weldon had come to his notice. In 1925, the Health Bureau of Rochester, New York, made some tests of Weldon and reported that unidentified alkalooids were found, together with salicylates or salicylic acid. In 1926, the A. M. A. Chemical Laboratory found the lavender colored tablets to consist essentially of salicylic acid and acetylsalicylic acid, extractives of an emodin-bearing drug with vegetable extractives, ground ginger and cinnamon. The medicinal part of the white tablets was found to consist of extract of cascara. Now in 1927, advertisements for Weldon are offered newspapers and to one such paper the advertising agency handling the advertising gave the following as ingredients of Weldon: Neocinchopen, Extract of Cimicifuga, Fluid Extract of Phytolacca, Magnesium Carbonate Light and Powdered Extract of Cascara Sagrada. A commercial laboratory that analyzed Weldon in September, 1927, reported that it consisted largely of vegetable matter, with about 5½ per cent of mineral matter. The vegetable matter was apparently phytolacca and cascara sagrada, together with acetylsalicylic acid (aspirin) and salicylic acid. The laboratory did not satisfactorily prove the presence or absence of neocinchopen, but did report that tests for alkaloids showed none present. It seems evident from these several analyses that Weldon, like so many other "patent medicines," is a name rather than a thing—while the name has remained constant the composition has varied. (Jour. A. M. A., October 1, 1927, p. 1167.)

### ASTHMA-SERA

This is another iodide-containing asthma and hay-fever nostrum. The statement "Asthma-Sera Ends Asthma and Hay Fever Forever" appears on the stationery sent out by the R. M. B. Laboratories, Seattle, Washington. It does not appear on the trade packages, which are subject to the control of the federal authorities which enforce the Federal Food and Drugs Act. Four bottles of Asthma-Sera "is considered a full treatment" price \$10.50. However, the purchaser of four bottles is told that, if any symptoms of asthma remain when the first half of the fourth bottle is finished, he "should order two more bottles of Asthma-Sera *immediately*." The A. M. A. Chemical Laboratory analyzed Asthma-Sera and reports that it is essentially a solution containing 8.8 per cent strontium iodide, 0.43 per cent sodium iodide, and an emodin-bearing (laxative) drug. That iodides will be effective in certain forms of asthma is well known to every physician. Strontium iodide has no advantage over sodium or potassium iodide. (Jour. A. M. A., February 11, 1928, p. 480.)

### "COLLOIDAL GOLD"

"Colloidal Gold" was developed by Professor Louis Kahlenberg and Dr. Edward H. Ochsner. It is claimed that the remedy has proved far superior to the roentgen ray and radium in the treatment of inoperable cases of cancer and also as a postoperative treatment. The Council on Pharmacy and Chemistry examined the evidence and reported in 1925 that there was no reason for believing that "Colloidal Gold" offers anything more in the treatment of carcinoma than do the other colloidal preparations that have preceded it. From the circular matter that is sent out for Collodaurum by the Kahlenberg Laboratories, Inc. (Successor to the Kahlenberg-Klaus Co.), it appears that this is essentially the same as the product formerly marketed as "Colloidal Gold." Further observations on the use of "Colloidal Gold" which have been published do not seem to permit a revision of the Council's estimate of the product. On the contrary, the new reports strengthen the Council's decision. (Jour. A. M. A., February 18, 1928, p. 564.)

## EARLY DIAGNOSIS OF INTUSSUSCEPTION IN CHILDREN\*

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**I**NTUSSUSCEPTION constitutes one of the major emergencies of pediatric practice. Successful treatment is dependent more upon an early diagnosis than upon any other factor provided reasonably skillful surgery is employed. Usually the early diagnosis is in the hands of the pediatrician or the general practitioner. The diagnostic phase of the subject being largely pediatric it is the purpose of this paper to deal principally with the early diagnosis of intussusception in children.

Intussusception is an invagination of the bowel into itself. It consists of two portions, that portion of the bowel which is intussuscepted, the so-called intussusceptum, and that portion of the bowel into which the intussusception occurs, the so-called intussusciens. Intussusception almost universally takes place in a downward direction. Strangulation of the intussusceptum rapidly occurs, with interference with the blood supply and thrombosis of the blood vessels. This leads rapidly to gangrene, a condition which is highly fatal in tiny babies. The intussusception may occur in the small bowel, in the large bowel or at the ileo-cecal valve. It is therefore called enteric, colic or entero-colic, depending upon its location. Ileo-colic or entero-colic intussusception is by far the most common type. The mechanism by which this intussusception occurs may be mechanical, caused by a polyp, etc., within the lumen of the bowel, or dynamic, the mechanism of bowel motility being at fault. While the disease may occur at any age, it is almost exclusively a disease of early life and most common under one year.

Intussusception in its typical form presents a very striking picture, one which should never be confused provided the condition is kept in mind. The classical case is that of an infant, apparently well, becoming suddenly ill with what is apparently a severe abdominal pain. This pain is so severe that the infant screams and oftentimes becomes pale and covered with a cold perspiration. Frequently with this sudden onset, the in-

fant vomits once or several times, although vomiting may not occur. The temperature is typically absent or may be subnormal. In the beginning the pain is apt to be continuous over quite a period of time but eventually it comes to assume a cramp-like character, coming and going at variable intervals. During the intervals between the pain the infant may be quite comfortable and may even play and smile. The cramps, however, are very severe when they come and every kind of severe distress is registered in the patient. Following the onset there is usually at least one normal bowel movement due to the emptying of the intestinal tract below the point of intussusception. This is eventually followed by the appearance of blood in the stools. At first this may be mixed with ordinary feces but eventually the normal bowel content will entirely disappear and be characteristically replaced by a mass of bloody mucous. The jelly-like mass of blood-stained mucous is rather more typical although clots of varying size and fluid blood even in large amounts may be present. Examination of the abdomen during the period of pain will frequently be very unsatisfactory. However, in the interval between the attacks, a satisfactory examination can usually be made. At this time tenderness is not a common feature. In a large proportion of cases a mass can be felt. The location of this mass depends on the location and site of the intussusception. If the intussusception is enteric the mass may be located about the navel. In the ileo-colic form, which is by far the most common, the location of the mass will depend upon the extent of the intussusception. In early intussusception the mass will be felt in the region of the cecum and ascending colon. As the intussusception travels farther within the large bowel, the mass may be felt at the hepatic flexure or across the upper portion of the abdomen, at the splenic flexure or extending downwards along the descending colon. Thus develops the so-called sausage shaped tumor which is characteristic in advanced cases. This tumor mass is oftentimes merely perceived as a sense of increased resistance. It is relatively soft and has

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a doughy consistence. Distention is characteristically not present early in the intussusception, but comes on later as in any type of obstruction. A leukocytosis appears rather early and may be quite high. This may be confusing in cases in which some inflammatory condition is suspected.

The progress in cases of intussusception is universally downward unless relief be obtained. The condition is fatal. Relief may be spontaneous, the intussusception reducing itself without any interference. In cases in which nothing is done, a sloughing of the intussuscepted portion of the bowel with ultimate recovery has rarely occurred. However, neither of these terminations can be anticipated and early operative interference is essential for a happy outcome. It is true, however, that cases vary in their acuteness. One may reach a fatal state of strangulation within a few hours, whereas another may not be so serious even after a long period of time has elapsed.

#### DIAGNOSIS

The diagnosis of intussusception should not be difficult in typical cases. The history of such severe onset accompanied by more or less shock, without temperature, should always make one suspicious. The spasmodic character of the pain after the initial distress is characteristic. If this is followed by a normal bowel movement following which blood appears in the stools the diagnosis can be made almost with certainty. The finding of a mass on palpation of the abdomen will make the diagnosis beyond question. In cases in which there is any doubt, the use of a barium enema may be very helpful in those intussusceptions affecting the large bowel. In enteric intussusceptions this is of no value. Occasionally the x-ray or fluoroscope may permit the outline of the obstruction without the use of an opaque enema. This is more likely in cases in which distention of the bowel proximal to the intussusception has already occurred. In less typical cases the diagnosis may not be so simple. Since our interest centers about the diagnosis of the intussusception I wish to present my case reports in this connection and bring them into the discussion.

Case 1. A baby boy, fifteen months of age, was seen in consultation with Dr. Ryan, who had seen the patient after another physician had been in attendance four days. There had been a typical onset with sudden, severe pain in the abdomen accompanied by vomiting,

following which blood appeared in the stools. When the first physician was called, he found a mass protruding from the rectum which he presumed was a prolapsed rectum and replaced. This procedure was repeated three times before Dr. Ryan saw the case. When I saw the case the patient was in extremis. The abdomen was distended with gas and fluid. There was a mass felt extending from the splenic flexure down into the pelvis, which mass presented just within the anus. Diagnosis of intussusception was made and operation immediately performed. At operation an advanced type of ileo-colic intussusception was found where the intussusception had progressed downward through the large bowel throughout its entire extent and protruded from the anus. Reduction was impossible and resection was followed by death shortly after the operation.

This case was rather typical of the neglected type of intussusception. The protrusion of the telescoped bowel from the rectum, in other words the extent of the invagination, was not so much a determining factor in the prognosis as the duration of the disease and consequent condition of the bowel. Reduction is sometimes possible even in those cases where the intussusception has progressed this far and recovery may occur provided the viability of the intussuscepted bowel is still good.

Case 2. This baby boy, eight months old, had always been well. One morning he began vomiting and vomited several times. He had no temperature but vomited more or less continually throughout the day until three o'clock in the afternoon. He had no large amount of distress at any time. I saw the patient shortly after eight o'clock because he had passed rather a large amount of blood in the stool. The mother stated that she thought the baby might have swallowed a pin about four days previously and that the blood might have been caused by the pin. At the time I saw the patient, he was happy and sitting up in bed playing. He had eaten and retained his regular 6 o'clock feeding. Examination was entirely negative. There was no abnormal abdominal distention and no mass. However, I did think I sensed an increased resistance in the lower abdomen. In view of the perfect comfort of the patient, the lack of any very definite symptoms of onset, outside of the vomiting, and the wholly negative physical findings, it seemed advisable to wait. The mother was told to give an enema and to report if any blood returned. This was done about 10 o'clock and a large amount of blood was returned. The patient was at once taken to the hospital with a diagnosis of probable intussusception and possible involvement of Meckel's diverticulum, duodenal ulcer or other unusual bowel condition. The patient was having some distress at times after arriving at the hospital although at no time was it extreme. A surgeon was called and after some debate it was decided to operate at once. X-ray had shown no evidence of any pin in the abdomen. This was done about midnight. An intussus-

ception, ileo-colic in type, was found extending about three inches into the ascending colon. This was reduced without difficulty, no resection being necessary. The patient left the operating room in good condition but died in the morning, the result of aspiration of gastric contents which had occurred during a very poorly administered anesthetic.

This patient is extremely interesting because of the very atypical history and the total lack of physical findings, in fact an almost complete absence of the picture of intussusception except for the presence of blood in the stools. There had been distress of an indefinite nature in the early portion of the attack. This, however, the mother had interpreted as being due to the vomiting and not to any severe intestinal disturbance. It was not until the occurrence of blood in the stool that she had any idea that a serious illness might be present. Even the vomiting had ceased five hours previously and the patient had taken and retained his ordinary evening bottle. In this case, Meckel's diverticulum, duodenal ulcer, polyp of the bowel or a largely hypothetical condition of hemangioma of the intestinal wall could not be differentiated except by operation. With either Meckel's diverticulum or intussusception operation was advisable and indeed imperative. Therefore, operation was decided upon and justified. A side lesson to be learned in this case is the necessity for a competent anesthetist and the danger of operating small infants without washing the stomach first.

Case 3. A baby girl, nine months of age, who had been previously well, awakened suddenly at five o'clock in the morning and screamed with pain. The patient did not vomit but continued to have crampy pains in the abdomen which came at rather frequent intervals. The mother gave an enema and a good bowel movement was obtained. Later castoria was given, which the baby vomited, following which she seemed to be much more comfortable. The pains were quite severe at first and the patient seemed to be somewhat prostrated. I was called at 11:30 on the phone and told the mother to give an enema and that I should see the patient shortly. I saw the patient at 1 o'clock, at which time the enema had just been completed and a small amount of bloody mucus returned in the stool. The patient was lying on the bed apparently quite comfortable, had a normal temperature, was not crying and apparently in no distress. Her color was perhaps slightly pale but not markedly so. On palpation of the abdomen a mass of doughy consistence was felt in the upper right quadrant of the abdomen. A diagnosis of intussusception was made and the patient taken at once to the hospital. The surgeon met the patient there and at this time there was no mass to be felt. The patient had revived considerably on the way to the hospital

and was smiling and happy and of good color. Operation was insisted upon, however, in spite of the fact that no mass was palpable at this time and the patient seemed so well. At operation the lower end of the ileum, the appendix, cecum and lower portion of the ascending colon were found inflamed and edematous. There was remaining a small button on the cecum which was still inverted and which was evaginated only with considerable difficulty. Because of the appearance of the appendix it was removed and the patient made an uneventful recovery.

This case is interesting because rather a typical onset occurred as far as pain was concerned. However, the patient vomited only once and that was supposed to be due to the administration of a cathartic. The patient had apparently returned almost to normal before I was called. Nevertheless at the time of the examination a definite intussusception was present with the mass at the hepatic flexure. By the time operation was performed practically complete reduction had taken place. However, there remained one small invaginated area which, while it would not have produced obstruction, might very well have become gangrenous. Furthermore, it might have acted as a starting point for a return of the intussusception. The appendix also was in such condition that thrombosis of the blood vessels might have resulted in a possibly gangrenous lesion. Therefore, we feel that operation was justified even though the intussusception had largely reduced itself.

Case 4. A boy, two years and five months old, who had been previously well, awakened early in the morning feeling quite ill. He tried to vomit on several occasions but was unsuccessful. He was very restless and the mother suspected that he had pain in the abdomen. She was not sure about this point, however. He was quite pale and extremely restless. He seemed to be in a sort of shock, there being complete relaxation of all his musculature. He had had one bowel movement which was normal. Temperature by rectum was 98. The physical examination was essentially negative except for a mass in the lower right quadrant of the abdomen. This was doughy in consistency. A diagnosis of intussusception was made and an enema given while preparing to go to the hospital. Blood was returned in the enema. In the hospital no mass could be felt in the abdomen and the patient seemed much improved. The surgeon was unable to substantiate the diagnosis of intussusception at this time but under pressure consented to operate on my diagnosis. At operation the intussusception was found to have been reduced. It is possible that complete reduction occurred during the act of delivering the intestine into the wound, it having been necessary to exert tension on the lower end of the ileum in exposing the bowel. However, the lower end of the ileum, cecum, appen-

dix and the lower end of ascending colon were all edematous and inflamed, showing that an intussusception had been present. Operation was followed by an uncomplicated recovery.

In this case there had not been extreme symptoms of pain. While the patient had been nauseated there had been no vomiting. The symptoms were decidedly less acute than one would expect from the picture of intussusception generally described. However, the presence of the mass in the abdomen and the blood in the stool, together with the evident shock in the patient, were sufficient to make a diagnosis. At operation there was apparently complete reduction of the intussusception. However, even though this had occurred, we feel perfectly justified in having performed the operation since by previous experience we know that intussusception may be present in the absence of pain and in the absence of any palpable mass. Once the diagnosis of intussusception had been made, operation we felt was imperative even though we recognized that reduction might have taken place.

Case 5. A girl, aged 7, had been complaining occasionally of pain in the abdomen for a month or so. On the day of observation she had been taken suddenly sick at the end of the school period in the afternoon with pain in the abdomen, so severe that she could hardly get home. She did not vomit but continued to have very severe pain in the abdomen, more marked in the lower right quadrant, which was constant but more severe by spells. When I saw her at 5 o'clock, about an hour and a half after the onset, the patient was pale, temperature was subnormal, pulse rather rapid. Physical examination, except for the abdomen, was negative. Here in the lower right quadrant she was moderately rigid and excruciatingly tender, it being impossible to exert any pressure at all over the appendiceal region. A tentative diagnosis of a very acute appendicitis was made and the patient sent to the hospital. A sample of urine was normal, the blood count was 19,600. Immediate operation was advised and operation was performed at 7 o'clock in the evening. At operation, instead of an acute appendicitis, an intussusception of about three inches of the ileum into the cecum was found. This was reduced with considerable difficulty and the appendix was removed. Recovery was uneventful.

In this case a diagnosis of intussusception was not made before operation. Because of the cramp-like character of the pain at the onset it was considered, only to be disregarded in view of the age of the patient and the history of indefinite abdominal pain for a period of a month or so previous to the attack. The fact that no temperature was present was perhaps unusual but possible in acute appendicitis. However,

the leukocyte count of 19,600 so promptly after the onset made us confident that an acute appendix was present. The absence of nausea and vomiting was a feature in this case. No blood was present in the stools at this early stage. It is quite probable that had an enema been given blood might have been found. The particularly interesting feature of this case is the fact that the patient was seven years old. Intussusception is nowhere near so common in patients of this age. It was probably the most important individual factor which led us to rule out an intussusception as a cause of the difficulty. The tenderness was apparently constant. It was very extreme and, because of it, examination for a mass could not be made. This extreme tenderness, being constant as it was, spoke rather against intussusception and in favor of an acute appendix.

Intussusception of the small intestine may occur. A certain number of such cases have their etiology in a persistent Meckel's diverticulum. The symptoms in these cases may be very confusing as shown by the following case.

Case 6. A baby girl, four and a half months old, was a perfectly well breast fed baby until about two weeks previous to the present complaint, since which time she had been rather fussy and apparently hungry. Three days previous to the present attack I had prescribed a formula of two-thirds milk, one-third water, plus six per cent sugar, one or two ounces after each feeding. On the evening after the artificial feedings were started the mother noticed that the patient seemed rather pale, but her condition otherwise failed to attract attention. About 3 o'clock the next morning, the patient awakened out of a sound sleep vomiting and crying as though in some pain. She vomited thereafter every fifteen minutes for several hours. I saw her about 9 o'clock and she seemed quite comfortable, had no temperature but gagged considerably. She had had a bowel movement which was green, curdy and somewhat slimy. The throat was quite definitely inflamed and the condition seemed to be an upper respiratory infection with gastro-intestinal manifestations. By evening she had developed a slight temperature and had continued to vomit from time to time throughout the day. At times she seemed to be in mild distress as though she had pains in the abdomen. That night the patient passed a fairly comfortable night although she did gag occasionally and vomited slightly. She did retain, however, some milk and water mixture. During the night the temperature rose to 101.5°. The next morning at 9:30 she was quite comfortable, even smiling at her attendants. Her temperature was slightly elevated and color excellent. The throat was rather acutely congested at this time and the abdomen slightly distended with gas but definitely not tender. At no time while I saw her did she cry as though in

pain. I left instructions for the nurse to give an enema for the relief of the gas. When the enema returned there was a moderate quantity of blood and bloody mucus mixed with the stool. The patient was immediately hurried to the hospital, where a barium enema was given to rule out a possible intussusception. The colon filled completely to the cecum without any obstruction. Due to the very mild symptoms I felt that intussusception of the small intestine could be ruled out. The patient was kept in the hospital throughout the day, during which time she rested well although she did not take much fluid or food by mouth. I saw her at 5:30 p. m. She was lying awake and had been talking to herself and playing with her hands during the past hour, according to the mother's testimony. I did not, however, examine the patient at this time as she seemed perfectly comfortable and I expected to see her later in the evening. By 8 o'clock there had been a tremendous change in the patient's condition. She had been vomiting severely and a tannic acid enema had returned a small amount of bloody mucus with the stool. The abdomen was extremely distended and the patient was very uncomfortable, crying and grunting persistently. She was gagging and coughing when unable to throw up. Temperature was 103.5°. Consultation was immediately called and the patient seen by Dr. Schlutz at 9:30 p. m. At this time no mass could be felt in the abdomen. Rectal examination was negative. The possibility of an acute abdominal surgical condition was considered but the occurrence of an acute overwhelming generalized infection seemed most probable. It was, therefore, decided to try general measures for a while and if this did not succeed to have the abdomen opened. Various means were used to reduce the distention and to force fluids into the patient but when no improvement had occurred by midnight, operation was performed. At this time before operation a mass could be felt per rectum in the lower abdomen, and a diagnosis of intussusception was made. This at operation was found to be the case. About 10 inches of the lower ileum was intussuscepted on itself, the head of the intussusception not reaching the ileo-cecal valve. Reduction being impossible, resection was performed and the patient died within a period of eight hours. In opening the intussuscepted bowel an inverted Meckel's diverticulum was found which formed the apex of the intussusception.

This case was extremely confusing because the symptoms of onset were in no way different from those occurring in a widespread epidemic of a mild gastro-intestinal disturbance accompanied by an upper respiratory infection which was prevalent at the time. The appearance of blood in the stool was, at first, an alarming symptom. However, when an enema was shown to pass completely up the large intestine to the cecum, it was felt that intussusception was ruled out. The symptoms were too mild, it seemed, to warrant operative procedure for a possible intussuscep-

tion of the upper bowel. The possibility of the blood coming from the lower intestinal tract was reasonable in view of the fact that several such cases had been seen in the epidemic already mentioned. Meckel's diverticulum as a cause of the hemorrhage was not considered. The acute developments occurring on the evening before the child's death were hard to explain but it was difficult to decide on immediate operation in the face of what we thought was probably an overwhelming infection. In retrospect, the initial symptoms up to this time must have been due to a Meckel's diverticulitis, the acute picture developing with the onset of the intussusception resulting therefrom.

Case No. 7. On the morning of May 5, 1927, the patient, a baby boy of eight months, was sitting on the floor when the mother noticed that he became somewhat fussy. He did not cry out, whimpered a little and apparently was somewhat disturbed. There was no vomiting. He was bearing down and from that the mother thought that he had had a bowel movement. When she picked him up to change him she found a mass protruding from the rectum about the size of a small fist. She called me immediately and I saw the patient within a half hour of the onset. At this time the physical examination was entirely negative except for a mass almost black in color protruding from the rectum about two inches. This was just beginning to exude a quantity of bloody mucus. No ulcerative areas were present and the bleeding seemed to be an exudation of blood over the entire surface. The patient was not very uncomfortable, was not crying, but was making some effort as though he were at stool. On examining the mass it appeared like a presenting end of an intussusception. The anal sphincter was well dilated and not at all clamped down on the mass. It was possible to pass the examining finger all around the mass between the sphincter and the protrusion. On passing the finger upward along the side of the protrusion it was not possible to feel the vault of this space. The mass was replaced without difficulty and pushed up as far as the finger would reach. After several minutes it was possible to place a roller bandage between the buttocks and to strap it with adhesive, thus preventing further protrusion. A diagnosis of intussusception of the lower bowel was made and the patient was hurried to the hospital. Here rectal examination revealed nothing. The mass had apparently disappeared or passed up beyond the reach of the finger. A barium enema was given and this showed the intussusception to have been reduced, the barium passing without obstruction to the cecum. There was, however, a redundant sigmoid which lay on the right side of the pelvis and which may have been a factor in the production of the intussusception. Some anxiety was entertained over the possibility of some permanent injury having been done to the intussuscepted bowel. It was impossible, of course, to observe the condition

of the bowel after the reduction. However, recovery was uneventful, the patient being entirely well as soon as the condition had been reduced.

This illustrates the comparative mildness of the symptoms when the intussusception is low down. There was no distress except the desire to defecate. This was rather marked, as is usual in intussusception involving the lower portion of the bowel.

The cardinal points of early intussusception are: (1) pain—sudden and severe, first constant, later intermittent; (2) early nausea and vomiting (in 166 cases out of 170, according to Hess); (3) prostration, sudden and out of proportion to other symptoms; (4) tumor, the most important sign (Hess), present in over one-half the cases; (5) stools which contain blood in varying amounts after one or more normal evacuations; (6) temperature which is typically absent or sub-normal in early stages. These points paint a picture of violence, which picture is perhaps too widely prevalent. While the majority of cases probably do conform to type in this respect, generalizations are of no value when we are confronted by an individual case. In such instance an intimate knowledge of the variation from the average is much more valuable than a generalized acquaintance with the usual picture and it is for the purpose of emphasizing certain unusual phases that this small series of cases is presented. All of the cardinal points have been violated in one or more instances. Pain was absent in Case 2. In Case 4 it was not sufficiently acute for the mother to understand that the patient had stomachache. In Case 3 no pain occurred from the time I saw the patient until the operation. Vomiting was absent in Cases 4, 5, and 7, and in Case 3 the vomiting occurred only on giving a cathartic and might thus have been considered accidental. Shock was absent in Cases 2 and 7 and had practically disappeared in Case 3 by the time a physician was called. Tumor was definitely absent in Case 2 and was not present until just before operation in Case 6. Of all the cardinal points blood in the stool was the most constant finding, it being present in all cases but the fifth and here time was not taken to find out if it was present. In our opinion, this is the most important individual symptom and frequently is the fulcrum upon which the diagnosis swings. Had we seen blood in the stool in Case 5 the correct diagnosis would have been made.

Many conditions besides intussusception give rise to blood in the stool. A proper appraisal of the case from all angles will usually permit a conclusive opinion.

Concerning the treatment of intussusception there can be no question but that it is surgical. Once the diagnosis is established, surgery is indicated at the soonest possible moment. The only exception might be a case such as Case 7, in which the intussusception was low down and it could be definitely demonstrated to have been completely reduced. With the ordinary ileocecal type of intussusception it is quite impossible from the clinical symptoms or *x*-ray study to be sure that reduction is complete. In illustration of this point let me refer to Case 3, in which reduction was not complete although the lumen of the bowel was not occluded. An *x*-ray would have been of no value whatsoever. A further reason for the necessity of operation would be the possible condition of the appendix. One is never able to tell whether or not involvement of the appendix has been sufficiently great to cause an interference with the blood supply and later gangrene of the appendix. Factors which determine the advisability of appendectomy will be entirely within the judgment of the operator at the time. We one time saw a case of gangrenous appendicitis in a one month old infant in which it seemed that the gangrene was a result of an incarceration of the appendix within an intussusception, the intussusception having reduced itself.

In conclusion let me emphasize the necessity for always keeping the condition of intussusception in mind. If this is done, the failures in making an early diagnosis will be few and far between. I wish especially to call attention to the fact that the picture may not be violent. In fact the symptoms may be so mild as to suggest merely a mild gastro-intestinal upset. In these cases, blood in the stool especially will be of great importance in making the diagnosis. It will always serve to bring the condition to mind at least and the employment of finer methods of diagnosis will usually lead to a definite opinion. Once the diagnosis of intussusception is surely made, immediate operation is demanded regardless of whether the symptoms have abated or not. The only possible exception would be an involvement frankly in the lower bowel when *x*-ray studies could reliably indicate reduction.

## CONGENITAL PYLORIC STENOSIS\*

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ONE sees many babies during the first few months of life that vomit; sometimes at every feeding and sometimes at alternate feedings. The vomiting is alarming because it interferes with the baby's weight. We always wonder in these cases whether we have a true congenital pyloric stenosis or simply a pyloric spasm. I have had cases recently with as much as 50 per cent retention of barium. In a week or ten days they would have no retention, and the vomiting would stop. This was due to the atropin and the cream of wheat diet. In other words, these were not cases of pyloric stenosis, but of pyloric spasm.

We used to feel we did not have a pyloric spasm as such, but that all cases were pyloric stenosis to a varying degree. We now do not believe this is true; in fact, we feel that pyloric spasm and pyloric stenosis are two entirely different cases. In the true stenosis cases, it is the circular muscle fibers that are involved; they become thickened to a considerable degree. The etiology is a conjecture; it is found more frequently in males than in females and has been recognized in fetal life as early as the seventh month. This is not in conformity with the idea that the stenosis is not present at birth but develops during the first few weeks of life. We have operated cases as early as the sixth day, and found definite pyloric tumors which could not possibly have developed during that time.

The symptoms are quite characteristic; they may be present at birth and become aggravated as days go on. The stomach is uniformly dilated; vomiting is persistent. Any patient who vomits for a few days, intermits for some time and then begins again, is not a true case of pyloric stenosis. It is true that a baby may retain two or three feedings and then vomit the accumulation of those feedings, but the vomiting in stenosis is daily. Characteristic peristaltic waves on the abdomen are seen following feedings, travelling from the region of the pyloric

end of the stomach to the cardia; reverse waves, entirely different from normal waves which run from the region of the cardia towards the pylorus.

Constipation is always present because the food does not pass into the bowel. Loss of weight, from 15 to 25 per cent within the first ten days, is characteristic, because most of the food is retained in the stomach and considerable of it is expelled by the vomiting.

Some authors believe that you should be able to palpate a tumor in most of the cases. We have not been so fortunate and I must confess that I have missed many tumors in babies that have proven to be definite stenosis cases. If the stomach emptied completely, it would be much easier to palpate the tumor, but in these cases there is considerable distention and bloating in the upper part of the abdomen.

The x-ray is always significant and very reliable. Any case with over 50 per cent retention of barium after six hours should be considered an operative case. In fact, authors disagree very much on this, saying that cases should be operated with very much less retention, so perhaps no rule ought to be given, but every individual case should be decided on according to the condition of the baby.

In the last few years the Mankato Clinic has had some very interesting cases that have been operated, and I will briefly reiterate a few of them.

Donna H., one month old, was seen in consultation. The parents thought the baby would not live until they could bring it to Mankato. It was very emaciated, had been vomiting more or less since birth, and had the appearance of a baby acutely sick. It was brought in and given 300 c.c. of normal saline intraperitoneally; glucose solution was given by mouth, and a buttersoup formula, besides cream of wheat and atropin. The same day 60 c.c. of whole blood was given intraperitoneally. The next day a half pint of saline was given intraperitoneally and in the afternoon of the same day the baby was operated upon. A typical pyloric tumor about half an inch in diameter was found. The usual operation was performed and the baby made an uneventful recovery.

Baby L., a seven months premature, did not retain

\*Read before the annual meeting of the Southern Minnesota Medical Association, Austin, Minn., Oct. 1, 1927.

any food to speak of from birth on, and at the end of five days an operation was decided upon. A condition of congenital pyloric stenosis was found and the baby made an uneventful recovery.

You may feel that I am reporting only the favorable cases. I am very pleased to say that so far we have not lost any cases of pyloric stenosis that have been operated upon.

Baby H. was a normal delivery, weighing 3,150 gms. In nine days the weight had dropped to 2,545 gms. It had been vomiting since birth and an operation was decided necessary. The usual operation was done, with the usual findings, and the baby made a nice recovery.

Baby Anderson, one month old, was not such a marked case of stenosis. The vomiting came on more gradually. There was a 40 per cent retention of the barium after seven hours. The baby's condition was quite satisfactory, but it did not improve and continued to vomit in spite of treatment. There had been very little vomiting until the baby was nearly a month old. At operation a small opening was made into the lumen of the pylorus, so it was necessary to put in a stitch and also to attach the omentum over the pylorus. The baby got along nicely except for some distention from gas and care had to be taken in the feeding.

Baby Elaine was seen when only one month old. The symptoms were typical of pyloric stenosis. The baby weighed eight pounds when born, and when seen, at 11 months, weighed nine and a half pounds. A very marked pyloric tumor was felt and the child did very well after operation. The baby was operated July 1, 1926, and on August 12th the mother wrote that the child was getting along nicely, had gained a pound and a half in a month and had kept all her food down. She was learning to walk and had several teeth.

Baby B., weighed seven and a half pounds at birth, and when eight weeks old only 7 pounds 12.5 ounces. Was first seen June 9, 1926; the general condition was good, although it was very constipated and vomited considerably. After the baby was ten days old it started vomiting some after every meal. There was 50 per cent retention of barium in the stomach. Atropin and a cereal diet resulted in some improvement, so that on the fourteenth of June the baby weighed 8 pounds 6.5 ounces, and the vomiting was considerably less. On the twenty-fifth day of June the baby weighed 9 pounds 7 ounces, but there was a great deal of bloating; in fact this bloating had been present all the time, but not to such a degree. The baby cried a good deal. Operation was advised and was performed on the twenty-sixth day of June. A definite tumor was found and, upon incising, the gas passed into the duodenum very readily. The bowels were so much distended that the operation was difficult. The baby did not do well following the operation, but continued to vomit, even water. This vomiting increased and two days following operation lavage

of the stomach was instituted twice a day. The bloating remained excessive and there was no bowel movement for four days following the operation. At this time the baby was in a very serious condition. A diagnosis of intestinal obstruction was made and an ileostomy was done. On the following day the baby was cyanotic, cold, clammy and pulseless, with Cheyne-Stokes respiration, and we considered death imminent. The ileostomy drained well but the baby continued to vomit. The next day the baby showed some improvement, retained some of its food, the bowels started to act normally and in every way she was better. The ileostomy tube drained so well that the child did not seem to get enough nourishment from the food. The tube came out on the fourth day and the wound was strapped. The baby immediately became more contented and derived some benefit from the food. The ileostomy opening healed in a few weeks. On the tenth of July the baby weighed 9.5 pounds, was taking 4 to 6 ounces at a feeding, besides Cream of Wheat, was having normal stools, slept well, and was in good condition.

Five of these cases were the first child born to the mother.

A number of years ago, Doctor Sedgwick instituted lavage and gavage treatment in place of operation. The stomach was washed immediately before feeding and at the same time food was administered through the catheter. He seemed to get good results from this. Since that time we have been gradually getting away from that line of treatment, and have been using, routinely, atropin with cereal before a feeding.

The operative treatment, however, is the most satisfactory treatment because it brings immediate results and the mortality is practically nil. In fact, many authors believe that, when once a diagnosis of pyloric stenosis is made, the indication for operation is there. Unless a baby is in poor condition, there is no harm in using atropin and cereal, but if improvement is not immediate, operation should be considered and probably undertaken.

The Ramstad operation is the one of choice. A longitudinal incision severs the circular muscle fibers the whole length of the pylorus, preserving the mucous membrane in its entirety. No sutures are taken. Really a hernia at this point is produced with a protrusion of the mucous membranes.

Following operation the baby should be fed very soon. A half dram of water is given in one hour, a half dram of breast milk in two hours, and this amount gradually increased.

## ECZEMA IN INFANTS\*

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ECZEMA is the most frequent disease of the skin in early life. The literature abounds in papers upon this subject, as is usually the case regarding conditions we do not clearly understand. Although much has been done to promote our knowledge of its etiology and treatment there is still wide diversity of opinion regarding its fundamental nature.

Eczema has diverse causes, both local and general. In infancy several factors are predisposing, such as tender skin and abundant gland secretions, the frequency of digestive disturbances, and the so-called exudative diathesis of which eczema is one of the chief manifestations. Eczema occurs in certain families more than others and is commonly associated with asthma. It usually appears in the breast fed, fat and apparently healthy child. These children ordinarily show some sensitization to vegetable or animal protein. A diet rich in protein, carbohydrate, but most commonly fat, may be the cause. Errors of metabolism are of importance, such as overfeeding, underfeeding and various digestive disturbances. Eczema is not in itself hereditary and dentition and reflex irritation do not cause it, as many suppose, although they may aggravate the disease. It is generally believed that it is not caused by any specific micro-organism.

There are several types of eczema seen in infants:

1. Erythematous eczema, which occurs most often on the face, genitalia and in the flexures and opposing surfaces, is red and slightly scaly, edematous in the acute form and infiltrated later, and is accompanied by burning and itching. It may develop into other types, tends to recur and often becomes chronic.

2. In papular eczema the elevated points, either in the discrete or coalescent form, are often capped by vesicles. Itching is intense. This type is resistant to treatment, exacerbations and relapses are frequent and it tends to persist.

3. Vesicular eczema begins as red edematous patches covered with vesicles which rupture easily and exude a clear, sticky serum, which dries into yellow varnish-like crusts. This type is most commonly seen upon the face and flexor surfaces and may be acute or chronic.

4. Pustular eczema usually develops from some other type, as the result of a secondary pus infection, but it may begin with pustules. This type is seen most often in poorly nourished infants.

How shall we treat such a condition which has so many variable factors involved in its etiology? Truly this is what appals most clinicians and accounts for the diversity in its treatment. To treat eczema successfully one must use both constitutional and local measures. The diet should be investigated as to kind, quantity, frequency and manner of feeding, and the relationship of certain foods to the appearance of the eczema.

Examination of the stools and especially cutaneous sensitization tests often give much information and many times greatly simplify the treatment. Whenever protein allergy is demonstrated, this protein should be eliminated from the mother's as well as child's diet if the child is breast fed. If bottle fed, the undesirable protein can be more easily eliminated. The breast fed child may have to be weaned, but not often. If breast fed and well nourished the interval between feedings should be lengthened, the time at the breast decreased and water forced between feeding. Mothers should be cautioned to eat a large variety of foods and small quantities of individual foods. In artificially fed infants the amount of milk should be reduced and the diet made up by adding cereals, vegetables and vegetable soup. Some infants do better on powdered milks than on fresh cow's milk. Underfeeding will, almost without fail, relieve symptoms, but this should not be considered. The child's health must be maintained for the infant with eczema is peculiarly liable to intercurrent infection and inanition with death will

\*Read before a joint meeting of the Stearns-Benton Medical Society and the Upper Mississippi Medical Society, Long Prairie, Sept. 29, 1927.

frequently result if the child is malnourished. It is in this malnourished type with infection that favorable results have been noted from the use of radiant energy supplied by the quartz lamp or by direct exposure to the sun's rays. Medical treatment has its chief indications in relieving constipation, correcting anemia and subduing nervousness. The general management is important. The skin should be protected against exposure to cold and winds and no soap or water should be used for cleansing. The clothing should be light to prevent perspiration. It is necessary to prevent the child from scratching, and wearing mittens or mask and splinting the arms are the usual methods employed.

Local applications give relief but the use of antiseptics alone is irrational. In the acute edematous type where there is weeping, and scales, crust or pus is present, wet dressings of boric acid solution or Burrow's solution is indicated. Most ointments used contain zinc oxide

and vaseline with additions of phenol and salicylic acid for itching and infiltration. Crude coal tar ointments have been very popular and efficacious. Some advocate using full strength of a fresh compound but personally I use a 4 per cent mixture with other constituents as indicated.

#### SUMMARY

1. Eczema tends to recur and frequently becomes chronic.
2. Local treatment alone may relieve some cases of eczema.
3. General management and control of the diet succeed in many others.
4. Sensitization to specific proteins is the cause in many cases and the removal of these proteins usually is attended with good results.
5. The successful treatment of eczema demands a thorough investigation, and much patience is required of child, parents and physician.

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#### FEVER-PRODUCING METHODS IN TREATMENT OF GENERAL PARALYSIS

Compilations have been made of the results obtained in cases of general paralysis treated with malaria. The treatment has also been applied to patients with syphilis of the central nervous system. A microscopic study of the brain following treatment by malaria leads to the conclusion on the part of the investigator that in some cases in the future the term "recovery" rather than "remission" will be justified. Relatively little has been reported during the past year concerning relapsing fever or sodoku as a therapeutic measure in neurosyphilis. It seems likely that, if infectious disease methods are to persist, a contest might arise between malaria and sodoku. Possibly the inoculation with an infectious disease will not continue to be necessary in the production of therapeutic fever. Reports have been published on the production of fever for treatment in general paralysis by the use of injections of foreign protein. The method has many advantages and the few cases on record give promise of good results. (Jour. A. M. A., October 15, 1927, p. 1337.)

#### SEPARATION OF THE ACTIVE PRINCIPLES OF THE POSTERIOR LOBE OF THE PITUITARY GLAND

Using both methods of fractionation by precipitation and methods of dialysis, two portions of pituitary extract were obtained, one of which responded almost entirely to the oxytocic method of assay whereas another portion was found to respond to the pressor method and practically not at all to the oxytocic. Both of these principles have been obtained in a state of highly potent water-soluble powders. It is reported that the substantially pure pressor principle, termed  $\beta$ -hypophamine, has been obtained as a white powder eighty times as potent as the International Standard Powdered Pituitary, while the oxytocic principle, termed  $\alpha$ -hypophamine has been obtained in a form 150 times as potent as the International Standard Powdered Pituitary. From this research the indications are that the pressor principle is responsible for the diuretic-antidiuretic action of the pituitary extracts. This work will undoubtedly lead to clinical applications of these principles, though at present the work is in an experimental state. (Jour. A. M. A., February 25, 1928, p. 618.)

# HEADACHES FROM A NEUROLOGIC STANDPOINT\*

GORDON R. KAMMAN, M.D.

*Saint Paul*

IN THE category of pains and aches to which humanity is heir there is none more common than headache. Few are the individuals who, some time or other, have not been the victims of it. However, it always is a symptom and never a diagnosis and there is no specialty in medicine in which it is not encountered. Obviously it would require many hours to discuss every aspect of headache, so for the present we will confine our attention to only its neurologic aspect. Even this attempt at limitation is fraught with difficulty because it might be said that inasmuch as all headaches involve a discussion of either the brain, its vessels, its coverings, or the cranial nerves, every headache has a neurologic aspect. However, this discussion will be limited to headaches that constitute a symptom of neurologic disease, and leave those due to non-neurologic conditions for discussion elsewhere. Inasmuch as most headaches are local manifestations of a systemic disturbance rather than of an immediately underlying pathology, the origin of the systemic disturbance being practically anywhere in the body, it is quite apparent that many kinds of headache will not come up for consideration today.

## AIDS IN DIAGNOSIS

A careful history as well as a thorough physical and neurological examination is absolutely essential in every case of headache, and by following this rule the physician frequently will uncover various factors which may throw a clue as to the origin of the trouble. Some of these factors are as follows:

1. *Conditions under which the headache is found.*—If the patient is being subjected to some emotional strain, or if he is of a definitely psychoneurotic type, or if there are obvious reasons for psychic conflicts, his headache may be purely functional in origin. On the other hand, if the patient is febrile he may have a mere toxic headache or it may be due to a meningitis, or an encephalitis, and so forth. Every patient should

have his optic discs examined, for not infrequently papilledema is the only clue to some severe intracranial mischief. Also the eyes always should be observed from time to time for the development of a squint.

## 2. *Associated symptoms.*—

A—*Ocular palsies.* These frequently indicate lesions at the base of the brain such as basal tumors, fractures, hemorrhages, or inflammatory exudates due to meningitis. They also occur as the result of degenerative lesions in the brain stem due to syphilis or destruction of the oculomotor nuclei by neoplasms. It must be remembered that because of the long intracranial course of the abducens nerve, abducens palsies (convergent squints) are of practically no localizing value. In the first place the nerve may be affected by intracranial lesions anywhere along its course from its emergence at the posterior border of the pons to its entrance into the orbit through the sphenoid fissure. Again, because of the complete absence of any "slack" in the nerve, it may be stretched and its conductivity thus interfered with by anything causing a posterior displacement of the brain stem, such as frontal tumors, and so forth. Further, increased intracranial pressure, irrespective of its cause, may cause the nerve to be pinched between the brain pressing it from above downward on to the irregular bony floor of the cranial cavity.

B—*Variations in the general physiognomy of the patient,* such as in acromegaly, may indicate the origin of a headache at a glance. The coarse features, protruding lower jaw, "Punchinello chest," enlargement of hands and feet, and so forth, are quite characteristic of pituitary disease which may result from tumors also causing excruciating headaches. The almost inevitable optic atrophy and blindness subsequent to these tumors makes their early recognition imperative.

C—*Vomiting.* The well-known triad of headache plus vomiting plus slow pulse is quite characteristic of increased intracranial pressure. Many think that the vomiting always is projectile in type but this is not true, for with in-

\*Read before the annual meeting of the Northern Minnesota Medical Association, St. Cloud, Minnesota, Sept. 12 and 13, 1927.

creased intracranial pressure one sees almost as many cases of non-projectile vomiting as of projectile. Probably more characteristic of so-called "cerebral vomiting" is that it bears no relation to the taking of food, occurs irrespective of whether the stomach is empty or full, and occurs when the headache is at its worst.

Vomiting is also a frequent concomitant of headache in migraine, and in this condition frequently is accompanied by a diminution in the severity of the headache.

D—*Vertigo* may accompany headaches of either functional or organic origin. It is frequently encountered in connection with the "lead-cap" headache of neurasthenia, but its presence should always put one on his guard for actual intracranial pathology. When it occurs in conjunction with nystagmus and vomiting it almost always means disease of the vestibular system, either in the internal ear, or along the brain stem or in the cerebellum.

E—*Head noises* frequently are associated with vertigo in the headaches due to high blood pressure. In this condition there usually is a sensation as if the head were full and wanted to burst. Sometimes patients tell one that they feel as if they wanted to knock their heads against the wall. It is axiomatic that every patient complaining of headache should have a blood pressure determination and a urinalysis made at the first examination.

F—*Mental symptoms.* Manifestations such as irritability, emotional instability, failure of memory for recent events, and sometimes actual delusions and hallucinations frequently appear as associated symptoms of headache due to cerebral arteriosclerosis. This condition may occur independently of any rise in blood pressure and without any manifestations of arterial degeneration elsewhere in the body. Advanced cerebral arteriosclerosis has been encountered in a young man of thirty with apparently normal radials and normal brachial arteries. The condition of the vessels in the ocular fundi many times is a good indication of the amount of sclerosis present in the cerebral vessels; the sclerotic, silver-wire arteries of the eyegrounds being visible evidence of definite cerebral arteriosclerosis.

G—*Position of the pain.* There has been a great deal written and there still is much controversy concerning the diagnostic value of the position of the pain in headache. It is the writ-

er's belief that this particular phase of headache has been somewhat over-rated as a diagnostic aid, and the various charts attaching diagnostic importance to certain cranial areas are not always reliable. Of course the typical hemi-cranial distribution of migraine, or the band-like sensation around the skull associated with a feeling of heat at the vertex as seen in neurasthenia, the so-called "Casque Neurasthenique" of Charcot, are of diagnostic value; but after seeing a large number of patients complaining of headache one agrees with de Schweinitz,<sup>1</sup> who says, "With due respect for the value of clinical classifications, distinctive features, and favorite sites for the cranial location of headache, errors in diagnosis are sure to arise if the practitioner is satisfied alone with the information they afford; headaches are accomplished counterfeiters."

H—*Convulsions*, whether Jacksonian or generalized, are a not infrequent concomitant of headache in brain tumors. Unlike the headache following an attack of essential epilepsy, the headache following an attack of symptomatic epilepsy due to a brain tumor does not disappear between the convulsive attacks but persists during the free intervals. It usually is excruciating and many times not relieved by even heroic doses of morphine. Obviously, generalized convulsions are of no localizing value, but those of Jacksonian type oftentimes furnish a valuable clue as to the possible location of the intracranial lesion. An accurate history of the site of onset of the convulsions, rapidity of spread, duration, and residual symptoms is absolutely necessary if one is to gain any information of value from them.

If a patient complaining of severe headache begins to have convulsions, one must also think of meningitis, and if a rigid neck, together with a positive Kernig sign, is found, a careful examination of the cerebro-spinal fluid is strongly indicated.

Whenever one does a lumbar puncture as an aid in the diagnosis of a headache the eyegrounds should be examined first. If a choked disc is found to be present, the puncture should be carried out with extreme caution. The foot of the patient's bed should be elevated and only a small amount of fluid removed, a few drops at a time. From ten to fifteen minutes time should be consumed in the removal of five cubic centimeters of cerebro-spinal fluid. Haste and impatience in

this procedure may be rewarded by death while the needle still is in the patient's back.

#### ANATOMICAL AND PHYSIOLOGICAL CONSIDERATIONS

Having finished with a discussion of the various clues which may lead us to the cause of a headache, let us consider the anatomy of the structures involved when this symptom is present and attempt to evolve a definite concept of what happens when an individual experiences a sensation which he interprets as headache. The brain itself is insensitive to pain. The dura mater is the only one of the meninges which is supplied with sensory nerves, its anterior portion receiving fibres from the middle branch of the trigeminus, the portion in the middle cranial fossa from the inferior branch of the trigeminus, and that of the posterior fossa from the tentorial nerve (first division of the trigeminus), and recurrent sensory branches from the glossopharyngeal, vagus, and the sympathetics. According to de Schweinitz<sup>1</sup> headache may interpret disturbance of the sensory centers in the brain, the nerves or nerve endings of the dura mater, or of the vasomotor mechanism. Ayer<sup>2</sup> believes that most headaches, leaving out the neuralgias, may be explained upon a pressure basis, either permanent or periodic, due to: (1) Increase in the amount of tissue within the cranial cavity; (2) arterial hypertension or venous congestion; or (3) an excessive amount in pressure of the cerebrospinal fluid.

However, in some conditions such as so-called "reflex headache," the headache of anemia, and certain of the hysterical headaches, this explanation does not seem to be entirely satisfactory and in some of these other factors must be taken into consideration. As before stated, the dura mater receives most of its sensory fibres from the trigeminus. Now, in the brain stem the cranial centers of the third, fourth, fifth, sixth, and seventh nerves all are closely connected by means of the posterior longitudinal fasciculus, and the fifth nerve, or trigeminus, is the sensory nerve for the areas to which the others run as motor nerves. Therefore, we have an arc, one limb of which is formed by the trigeminus which also supplies the dura mater with sensory fibres. It is quite conceivable how an irritative process in the area of distribution of any of the nerves mentioned could be projected out to the dural terminals of the trigeminus and be interpreted

as headache. O'Connor<sup>3</sup> in an excellent article uses the above conception as an explanation of reflex headaches, especially those of ocular origin.

Before passing on to a classification of headaches due to neurologic conditions, it might be well, for the sake of orientation, to merely mention some of the more important non-neurologic causes of this symptom. Chief among these is eye-strain. Various authors estimate that refractive errors and muscular imbalances are responsible for anywhere from 50 to 80 per cent of all headaches. General systemic diseases, the various toxemias, anemia, constipation, pelvic disturbances, fatigue states, and polycythemia, also are frequent and important factors in the production of headaches of non-neurologic origin. The *modus operandi* of many of these is assumed by Ayer<sup>2</sup> to be an alteration in the balance between the intracranial fluid pressure and the intracranial blood pressure. For instance, in polycythemia and in uremia there is increased cerebrospinal fluid pressure and in these conditions the headache is relieved by a reduction in the pressure. In anemia and in headaches following lumbar puncture there probably is less fluid than normal, and in the latter pituitrin sometimes has given relief. Here the condition is probably due to too much venous blood, *i.e.*, engorgement of sinuses, and occurs almost exclusively in the upright position, again emphasizing the lack of balance between the cerebrospinal fluid pressure and the intracranial blood pressure. Similarly the headache one gets wearing a collar that is too tight probably comes from cerebral venous engorgement, and the same thing is seen in some forms of cardiac decompensation.

#### FUNCTIONAL HEADACHES

When regarding a symptom such as headache from the neurologic standpoint with a view to diagnosis, one immediately asks himself the question, "Is it functional or organic?" By a functional headache we mean one that has as its basis no demonstrable structural alteration in the central nervous system. In this connection changes in the cerebrospinal fluid volume and in the volume of intracranial blood must be regarded as structural alterations. In other words, when we speak of a headache as being "functional" we refer to it as being due to an alteration in function rather than to an alteration in structure. The causes for many of these may be found at the

psychological level and have as their basis the various neuroses and psychoneuroses. However, it is the writer's opinion that the group of "functional" headaches still is much too large and that many of them are classed as such merely because we are ignorant as to their true nature. Like the term "idiopathic," the word "functional" has been very much overworked and all too frequently used to cloak our ignorance. As our diagnostic abilities improve, and our anatomical, pathological, and physiological acumen increases, the group of so-called functional diseases will decrease in size and we will be able to explain more and more of them on a basis of either structural or chemical alterations. With our present knowledge, and according to the distinctions already drawn, we are forced to regard migraine, epilepsy, and various neuralgias as functional disorders. Yet, it will not be many years before some of these entities are shifted over into the organic group and their true pathology be a matter of common knowledge.

Following are a few case reports illustrating some of the more commonly encountered headaches of the functional type:

*Case 1.*—Miss C., aged 34, typist, unmarried. First seen by us August 3, 1926. Past history showed patient to be of a "neurotic" temperament, *i.e.*, always easily irritated, inclined to worry a great deal about herself, quite jumpy, easily startled, and a poor sleeper. Her present complaint began about June 15, 1926, with a feeling of constant fatigue. The slightest effort, especially any that was connected with her work, would tire her all out. Associated with this fatigue was a dull headache which at first was periodic, but later on became constant. This headache was in the form of a pressing sensation on the top of her head, and by July 20 was constantly present throughout the day, beginning shortly after she arose in the morning and continuing until she retired at night, never leaving her for an instant. However, this headache *never kept the patient awake at night* although she was a poor sleeper. She gave as the reason for her difficulty in sleeping the fact that she was "nervous." Her appetite was very poor, and in the four months previous to her visit to our office she had lost about twenty pounds in weight. In addition to the above symptoms the patient also stated that she was of a very sensitive and reticent nature. She had consulted seven physicians and each one had offended her greatly by their inability to find any physical cause for her headaches and fatigue, and suggesting that she consult a nerve specialist.

The patient's general physical and neurological examinations were entirely negative except that she was underweight and definitely of the asthenic type. Her hemoglobin was 82 per cent, blood pressure systolic 112, diastolic 76, and urine negative. The mental examination failed to reveal the presence of any abnormalities

except that the patient was extremely egocentric and introspective. She was able to give the date of onset and duration of each and every one of her various symptoms. Her emotional reactions did not seem to be concomitant with the severity of her complaints, and although she repeatedly asserted that she suffered untold tortures in absolute silence and never complained to a soul about herself, she consumed the better part of two hours in a recital of her symptoms to the writer.

A diagnosis of neurasthenia was made, the patient was given some mild sedatives and put on a super-nourishing diet abundant in milk and eggs. Along with this she was given suggestive therapy such as high frequency currents to her head, and under this regime she gained thirty pounds in weight, her headaches disappeared, she slept better, and after eleven weeks of treatment was able to do a full day's work without experiencing the slightest sign of fatigue.

The important diagnostic features of the above case were the absence of any neurologic signs, the patient's attitude toward herself and her illness, the marked persistence of her headache for every second during the day, and the fact that it never kept her awake at night. Headaches which awaken patients from a sound sleep at night usually are organic, while those which never leave the patients for even an instant during the daytime but disappear at night usually are functional.

The psychoneurotic headaches are usually seen in nervously unstable individuals who give a past history of "never having been strong." These unfortunates wander from doctor to doctor getting some measure of relief from each new procedure but sink back into the same old rut when the novelty has worn off. They frequently obtain relief from the charlatan because this individual sometimes practices better psychotherapy than does the regular physician. He gains the confidence of his patient by first making a definite diagnosis (usually incorrect, however) and then guaranteeing an absolute cure. Then by a series of elaborate maneuvers, together with a lot of conversation which would be condemned as unorthodox and illegitimate by the regulars, proceeds to succeed where the others have failed. No attempt is being made to condone the methods used by these quacks, but attention is drawn to the immense value of psychotherapy in these cases.

In these days when workmen draw compensation for injuries they have received while on duty, and when an individual can obtain a good rest at the expense of his employer or of an insurance company, the so-called "traumatic neu-

rosis" has become a commonplace to those of us engaging in medico-legal work. Sometimes this condition is called "indemnity neurosis" because the symptoms always are aggravated by impending litigation, and usually disappear shortly after a financial settlement is made in the case. This condition should not be confused with malingering, because in it the patient's symptoms actually do exist, while the malingerer has no real symptoms whatever.

The following case is an example of traumatic neurosis in which headache was the main symptom:

*Case 2.*—A. B. C., aged 27, married, and a bus driver. He stated that he was well until September 10, 1924, when a bus in which he was sitting was struck from the rear by a large truck. At the time of the impact the patient was leaning forward to put his car in gear, and as the bus was knocked forward by the force of the collision he was jerked upright with sufficient force to throw his hat into the back seat of the bus. About two hours after the accident, after the patient had driven a considerable number of miles, he began to have pain in the occipital region and radiating up over the top of his head. He described this pain as a "dull, aching, drawing sensation," which was constantly present but only during the daytime, and persisted every day for several weeks following the accident. The day following the accident, the patient began to have dull aching pains in the lower lumbar region, and these persisted until the time we saw him, six weeks after the accident. At that time the headache had disappeared but had returned soon after the patient returned to work. After he had made one round trip in his bus his head had begun to pain him and he was forced to stop driving again. Subsequent to this time any form of vibration such as riding in an automobile or street car caused the headache to return. Aside from this symptom, the patient complained of being restless, jumpy, nervous, and irritable since the accident. Sudden noises caused him to jump, and he was easily startled by any unexpected happening. The neurological and physical examinations were entirely negative. The mental examination was negative except for some emotional instability and the fact that the patient was unduly apprehensive about himself. The family history showed a definitely psychoneurotic background. A diagnosis of traumatic neurosis or traumatic hysteria was made, the patient put on mild sedatives and electrotherapy, and the company was told to settle the case as soon as possible. After two months of treatment the patient showed marked improvement and then failed to gain any more. However, one month later as soon as a cash settlement was made and the patient had signed the release papers, his residual symptoms disappeared and he was able to return to work in two weeks.

The persistence of this man's headache for weeks after the accident, the absence of any organic neurologic signs, the peculiar way in which the headache could be brought on (by riding in

a car) and the free time interval between the accident and the onset of symptoms (*une période de méditation*) establishes the diagnosis. The disappearance of the symptoms under sedatives, suggestive therapy, and settlement of the case are quite characteristic of this type of headache.

It has already been stated that functional headaches are those due to conditions in which there is no demonstrable structural change in the central nervous system. If one wants to adhere to this specification, the various cranial neuralgias as well as migraine must be classed among the functional diseases. However, the writer wishes to reiterate the opinion that when we know their true pathology and become aware of their underlying causes, these conditions will be regarded as organic diseases. The following case report contains a hint in the proper direction:

*Case 3.*—Mrs. G. H. J., aged 33, came to the office in August, 1926, complaining of severe unilateral headaches. Her past and family histories were negative except for the fact that her mother had suffered from headaches similar to the patient's. The patient's trouble began when she was 26 years old and consisted of periodic attacks of excruciating pain confined to and always involving the right side of the head (hemisphera). The attacks were preceded by a prodromal period of about one hour during which the patient felt weak, tired, and irritable. The headaches were always accompanied by extreme nausea, flashes of light before the eyes, and marked photophobia. The patient would be obliged to lie down in a darkened room, and the nausea would continue until she vomited a few times. After this she would fall asleep for from one to four hours and then awaken entirely free from headache. These attacks would come on at intervals of about once every seven or eight days and were especially severe around the menstrual period. At some time or other during an attack the tissues around the right eye would suddenly swell up and remain so until the headache disappeared (angioneurotic edema). The general physical, neurological, and mental examinations were negative throughout. Her hemoglobin was 90 per cent; blood pressure, systolic 136, diastolic 82; urine negative, and blood Wassermann negative. A diagnosis of migraine was made, and under calcium and luminal therapy, together with a series of intravenous injections of sodium bicarbonate, the headaches decreased both in severity and in frequency.

The above case is of unusual interest because of the angioneurotic edema associated with the attacks of headache. It is quite conceivable how the same thing could occur within the cranial cavity as around the right orbit. In fact, some observers believe that the symptoms of migraine are due to such an angioneurotic edema of either the brain or the meninges, and the forms having ophthalmoplegic and hemiplegic manifestations

as associated symptoms seem to lend support to this view. If this is true, migraine should be classed among the headaches of organic origin.

*Case 4.*—Mr. D. E. F., aged 51, married, and a railway conductor, came in on June 18, 1927, complaining of severe pains in the right side of his face. His family and past histories were negative except that the patient had at one time been rather a heavy drinker. His pains were lancinating in character, excruciating in severity, and spasmodic in occurrence. They were confined to the area of distribution of the middle branch of the right trigeminus and were initiated by stroking the skin over this area, washing the right side of his face, brushing the upper teeth on that side, chewing, and sometimes by talking. He had had all of his teeth pulled at the request of one physician, been treated for syphilis upon the advice of another (his blood and spinal fluid both were negative), and had the right side of his tongue cauterized by still another doctor. Finally a dentist made the diagnosis of tic douloureux or trifacial neuralgia and sent him to the writer for treatment. The physical, neurological, and mental examinations were normal. All laboratory examinations were negative. The middle branch of the right trigeminus was injected with alcohol at its exit from the base of the skull, and the patient obtained instantaneous relief from his pain. There still is an area of anesthesia over the area of distribution of the nerve injected and the patient still is free from pain. As soon as the effects of the injection wear off and the pains return, the nerve will be re-injected.

In a considerable percentage of cases of tic douloureux, relief can be obtained from alcoholic injection of the nerve affected. In a certain number of cases, however, either because of structural anomalies or inaccessibility of the nerve, injection is of no avail and intracranial section of the sensory root of the trigeminus must be resorted to.

Headache is frequently seen as a prominent symptom in other functional nervous conditions such as psychasthenia and major hysteria, but their similarity to those enumerated in neurasthenia and the traumatic neuroses is so great as to obviate the necessity of reporting any cases here.

#### ORGANIC HEADACHES

Passing on to the headaches which are due to underlying structural changes within the cranial cavity (organic headaches) I divide them into four main etiologic groups.

#### I Intracranial Tumors.

- A Neoplasms of Brain, Meninges, or Skull.
  - 1. Benign
  - 2. Malignant
    - a Primary
    - b Secondary

- B Aneurysms
- C Cysts
- D Gummata
- E Tuberculoma
- F Abscesses

- 1. Hematogenous
- 2. By direct extension from middle ear or from sinuses.

#### II Intracranial Inflammation

- A Bacterial Meningitis
- B Syphilitic Meningitis
- C Serous Meningitis
- D Sinus Suppuration
- E Cerebral Syphilis
- F Encephalitis
  - 1. Acute epidemic encephalitis lethargica
  - 2. Chronic encephalitis.

#### III Intracranial Vascular Disturbances

- A Hemorrhage
- B Thrombosis
- C Embolism
- D Arteriosclerosis
- E Syphilitic Endarteritis.

#### IV Cerebral Edema

- A Alcohol
  - a Acute
  - b Chronic
- B Uremia
- C Cerebral Concussion
- D Skull Fracture
- E Systemic and Constitutional Disturbances such as Malignant Hypertension, etc.

Following are a few case reports illustrating each of the four main etiologic groups of organic headaches:

*Case 5. Headache due to an intracranial tumor.*—R. C., male, aged 44, married and a truck driver, was first seen at Queen's Square Hospital, London, on May 2, 1926. At that time he was complaining of headache, double vision, vomiting, and occasional dimness of vision in the left eye. His family and past histories were essentially negative. The present illness began about March 26, 1926, with left frontal headaches associated with vertigo. The patient staggered forward when he walked, but never from side to side. The headache was dull and aching in character and extended from above the left eye, over the top of the head into the occipital region. At first there was marked vomiting every time the patient ate anything, so he practically gave up eating altogether and later the vomiting subsided. About one month later the patient began to have diplopia, especially when he looked to the left or upwards. This increased in severity. The headache gradually became more and more severe until there were periods during which it was excruciating. It would come on with increased severity for a few

hours and then gradually disappear for an hour or so.

About April 26, 1926, patient became very drowsy and began to yawn considerably. His memory became impaired and he became emotionally depressed and worried a great deal.

The neurological examination on May 2, 1926, showed a bilateral choked disc, more pronounced on the left, the right pupil was slightly irregular, and there was a weakness of the left external rectus (left sixth). The other cranial nerves were normal. There was some falling away of the right arm with the eyes closed, with questionable diminution of touch and pain senses. Vibration sense was definitely diminished in the right arm and right foot. Aside from some decrease of the right abdominals, all of the reflexes were normal. There was no Babinski or ankle clonus. There was some tenderness on tapping and pressure over the left frontal and temporal regions. X-rays were all negative.

On May 5th during the course of an examination by Dr. Gordon Holmes, the patient's right arm began to twitch and fall away. The twitching was clonic in character and there was loss of tone in the extremity. The patient became confused and aphasic and comprehended questions with great difficulty. His speech became slurring and he responded only after much hesitation. There was marked weakness of the muscles of the right side of the face and the tongue deviated to the right. The right arm was by this time practically useless and two-point discrimination was lost in the right hand, while position sense and stereognosis remained normal. The right abdominal reflexes were absent. All other findings, including spinal fluid examination, were normal. Optic nystagmus was absent in the clockwise direction. A diagnosis of left frontal tumor was made and operation recommended.

On May 9, 1926, a left frontal craniotomy was performed by Mr. Percy Sargent. Nothing was found except some softening of the left temporal lobe, so the scalp was closed and the patient returned to his bed. Eighteen hours later there was a sharp rise in the patient's temperature, he became paralyzed all over (quadriplegia), his eyeballs became fixed, and he died as if from intraventricular hemorrhage. Autopsy revealed a glioma on the under surface of the left temporal lobe involving the cortex about half way back.

*Case 6. Headache due to intracranial inflammation.*—M. N. O., an unmarried female, was examined at the Ancker Hospital, St. Paul, on June 12, 1927. Her family and past histories were essentially negative except that during the past winter she had not been feeling quite as strong as usual, had lost some in weight, and had a slight cough. She had missed her last menstrual period. Her present complaint began on about June 6 with severe frontal headache. At first this was more or less intermittent and did not interfere with her work as a maid. It would come on at about noon and persist until about midnight, when it would disappear under the influence of some medicine given her by another physician. The pain was dull in character and worse when the patient would cough or stoop over. There also was some photophobia and the

patient felt generally irritable. On the fourth day the headache became much more severe and radiated down into the back of the neck and between the scapulae. On the fifth day there was transient diplopia and the headache was more constant and very intense. Examination at that time showed the right pupil to be slightly larger than the left but both reacting to light and accommodation. There was a slight weakness of the right external rectus (abducens), some rigidity of the neck, bilaterally increased knee jerks, a mild bilateral Kernig, and a positive Babinski on the right. Sensation was normal throughout except for a general hyperesthesia to all forms of stimulation. The patient was a trifle somnolent but could easily be made to answer questions and perform the various tests incident to her examination. Whenever moved, she complained of excruciating headache. The temperature was 100.2 degrees F., and the cerebrospinal fluid was yellow, under markedly increased pressure, and contained 568 cells, mostly lymphocytes. Smears were negative for micro-organisms. After standing for 12 hours the fluid showed pellicle formation. The patient's headache had been somewhat relieved by the spinal drainage. A diagnosis of tuberculous meningitis was made and three days later confirmed by the finding of tubercle bacilli in the cerebrospinal fluid. The patient died one week later after a marked aggravation of all her symptoms.

The above case illustrates how *headache may be an early symptom of serious and even fatal organic disease*. It emphasizes the fact that too often the *treatment* of a headache precedes a careful investigation as to its *cause*. Of course, early recognition of the tuberculous meningitis by the outside physician would not have changed the final outcome in this case, but in other conditions an increased risk may be incurred by the patient through delay in recognizing the possibly serious underlying cause of a headache.

*Case 7. Headache due to intracranial vascular disturbance.*—W. T. Y., female, aged 47, was first seen on June 24, 1927. At that time her chief complaint was severe headache, dizziness, restlessness, emotional instability, and impairment of memory. Her family and past histories were essentially negative. The present illness began about six months previous to the time we saw her with vertiginous attacks coming on especially when she exerted herself, and aggravated by stooping over or by sitting up suddenly from a reclining position. About six weeks later she began to have generalized headaches and described them as more of a feeling of fullness in the head than sharp pains. She said that at times her head felt as if it were going to burst. Her daughter stated that along with the headaches the patient seemed to be much more irritable, would cry at the slightest provocation, and seemed to have difficulty in remembering recent events. She had great difficulty in sleeping at night and obtained no relief from various sedatives such as veronal and luminal. She would fall asleep while sitting up after a heavy dinner in the evening, but upon retiring at

night would be as wakeful as ever. The headaches had been growing progressively worse and when we examined the patient they constituted her most prominent symptom. The neurological examination showed the vessels of both ocular fundi to be markedly sclerotic and tortuous (silver-wire vessels), cranial nerves otherwise normal, bilaterally increased knee jerks, a positive Babinski on the left side, and bilateral ankle clonus. The patient was of the thin, wiry type, her peripheral arteries showed no evidence of sclerosis, the blood pressure was 164/94, hemoglobin 76 per cent, and urine negative except for a slight trace of albumin and a few leukocytes.

A diagnosis of cerebral arteriosclerosis was made and under a mixture of sodium bromide and potassium iodide the patient showed some improvement. She became less irritable, her head felt somewhat more comfortable, and she reacted better to hypnotics at night. Of course, this improvement must be regarded as only temporary, and later on this patient's condition will in all probability become progressive.

An interesting feature of the above case, aside from the headache, is the insomnia. Many people with cerebral arteriosclerosis can sleep better with the head elevated, *i.e.*, sitting up in a chair. Not infrequently one encounters individuals who invariably fall asleep while sitting in front of the fire after having eaten a heavy meal, but cannot sleep when they go to bed. The rigid cerebral vessels, incapable of dilatation, together with a full stomach, the upright position, and the heat of the fire on the lower extremities are ideal factors in the promotion of a cerebral anemia with resulting drowsiness. When these people go to their cool bedchambers and lie down, the cerebral arteries are unable to contract and there is a relative cerebral hyperemia which prevents sleep. Therefore, the simple expedient of raising the head on extra pillows not infrequently is of great help in getting cerebral arteriosclerotics to sleep at night.

*Case 8. Headache due to cerebral trauma.*—V. E. D., male, married, aged 40, was struck by a truck on July 19, 1924, and rendered unconscious for about two hours. The force of the impact threw him for a distance of about 20 feet and he landed striking the right side of his head on the pavement and severely lacerating his right ear. There was no bleeding from the nose or ears, and no ecchymosis around the eyes. Upon regaining consciousness he was totally irrational and quite noisy for 24 hours. At the end of this time he quieted down somewhat and at times appeared to know where he was. During the following week he gradually improved and on the eighth day was able to answer simple direct questions although not always correctly. There was a retrograde amnesia extending back to one week preceding the accident and including the circumstances surrounding the accident itself.

At this time he began to complain of headache and double vision and his pulse varied around 48 to 52. At this time he was first examined by us and found to be mildly confused and partially disoriented as to time and place. He complained of intense generalized headache, his pulse was 56, and the neurological examination was negative for organic signs except for a positive Romberg toward the right and a diplopia, analysis of which indicated a weakness of the right superior oblique (4th nerve). Lumbar puncture revealed the cerebrospinal fluid to be under markedly increased pressure but otherwise normal throughout. Several *x*-rays of the skull were negative. The headache was temporarily relieved by the lumbar puncture but returned a few days later and subsequent punctures were necessary to keep the patient comfortable. He developed various mental signs, prominent among which was a typical Korsakow's psychosis which persisted for two weeks and then cleared up. However, the headache remained as the most distressing symptom for some months afterward, although after the first few weeks the cerebrospinal fluid pressure had returned to normal. The patient's condition gradually improved, he became able to get up and around by himself, but he still has sufficient headache, diplopia, and loss of power of concentration to prevent him from engaging in any gainful occupation. It is now three years since his accident.

This man evidently sustained either a severe cerebral contusion or laceration resulting in a disturbed balance between the intracranial blood pressure and the intracranial fluid pressure. Some of the damage undoubtedly was permanent, accounting for the persistence of certain of his symptoms. Of course the chances for complete recovery in this case are extremely doubtful and the patient in all probability will be troubled with headaches for an indefinite period of time to come.

Obviously it has been impossible to enumerate, discuss, and illustrate all of the different kinds of headaches which are encountered by the neuropsychiatrist. However, if some of the vast amount of material comprising this one portion of the general field has been only partially organized, the object of this paper will have been attained.

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## BLOOD SUGAR AND IRRITABILITY \*

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INTEREST in this question arose many years ago when it was again noted that nerves immersed in an isotonic sugar solution showed a rapid decrease in irritability. With the arrival of insulin and the frequent occurrence of the hypoglycemic syndrome, interest was renewed. The effectiveness of glucose in stopping convulsions and the increase in blood sugar in certain types of anesthesia, increased the interest and gave rise to the question of a possible normal relationship between the irritability of the nervous system and the level of the blood sugar. Such a relationship might be altered in pathological conditions.

Several authors have given some attention to the hypoglycemic syndrome. Weill<sup>1</sup> found that extreme hunger and weakness of the limbs occurred in hypoglycemia. The low sugar alone was considered responsible. Fletcher<sup>2</sup> considered a feeling of nervousness, excessive hunger, sweating, pallor and incoördination as constituents of the hypoglycemic syndrome. He thought that the blood sugar lowering was not the real cause of the symptoms. Undernourished patients showed more severe reactions than well nourished ones.

Levine<sup>3</sup> found that after a Marathon race some of the runners exhibiting a marked fall in blood sugar showed muscular twitchings, extreme pallor, a cold and moist skin, and a nervous irritability. Some passed into collapse and unconsciousness. The runners who showed a normal blood sugar exhibited no symptoms of shock. Levine considered it significant that a correlation existed between the blood sugar level and the physical condition of the runner at the finish. Gordon<sup>4</sup> tried feeding candies to runners who tended to have low blood sugar values. He found that the blood sugar in these cases was normal at the end of the race, and that the physical condition of the subjects was excellent. Burger<sup>5</sup> found a resemblance between the results of severe physical exertion and hypoglycemia.

Two of the seven subjects became hypoglycemic after exercise.

Fischler<sup>6</sup> studied hypoglycemias in animals. He found that Eck fistula dogs, either when hungry or after phlorhizin, showed a rapid fall in blood sugar, followed by convulsions. Rabbits behaved similarly. The toxic effects were relieved by glucose. He stated that he had not observed convulsions without a lowering of the blood sugar.

Parker<sup>7</sup> believed that asthenia, anorexia, tachycardia, palpitation and digestive disturbances, were associated with a blood sugar below the average. The symptoms were relieved by feeding 40-100 grams of sugar daily.

A very few results on nerves and muscles after insulin will be mentioned. Banting<sup>8</sup> found hyperexcitability with lowered blood sugar after insulin. Wattner<sup>9</sup> found that the threshold response of muscles to galvanic stimuli was lowered after insulin. Behrendt<sup>10</sup> likewise found that the irritability of muscles was increased after insulin. Laquer<sup>11</sup> did not believe that there was a direct connection between the hypoglycemia and spasms after insulin. He thought it probable that a spasmogenic substance is formed.

There have been some interesting observations made on blood sugar and spinal fluid sugar. Thalhimer<sup>12</sup> studied fourteen cases of epidemic encephalitis. He found the sugar of the blood and of the spinal fluid to be increased (0.297 and 0.177 per cent). He believed that the spinal fluid sugar increased only after a certain level of blood sugar had been reached.

Polonovski<sup>13</sup> found an increase in the reducing power of the cerebrospinal fluid in encephalitis. Wilcox<sup>14</sup> stated that the spinal fluid sugar is high in encephalitis and low in acute and tuberculous meningitis.

Fremont-Smith<sup>15</sup> believed that an acute infection of the meninges was indicated by a spinal fluid sugar below 50 mgms. in the absence of an hypoglycemia. Kohler<sup>16</sup> found the spinal fluid

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sugar high in encephalitis and low in tuberculous meningitis, as did Cookson.<sup>17</sup>

Wladyczko<sup>18</sup> noted an increase in epilepsy cases in Russia at a time when sugar was scarce. He administered sugar in cases of epilepsy which were accompanied by hypoglycemia and found that in eighteen of the cases the attacks became more rare and milder. He believed that since blood with a reduced sugar content may irritate the nervous centers, causing convulsions, the administration of sugar may prevent them.

Not all types of anesthesia are accompanied by high blood sugar. Page<sup>19</sup> found that isoamyl ethyl barbituric acid did not increase the blood sugar even during surgical anesthesia. Oberhelman<sup>20</sup> found the blood sugar increased 35 mgms. per 100 c.c. in ethylene anesthesia. Chantaine<sup>21</sup> stated that during ether narcosis the blood sugar is increased. This increase may range from 30 to 50 per cent. During narcosis with ethyl chloride, the blood sugar may remain unaltered.

Keeton<sup>22</sup> found a persistent hyperglycemia in normal dogs under continuous ether insufflation. Atkinson<sup>23</sup> found that in dogs the sugar increased from 0.102 to 0.2 per cent after two hours under ether. It was still 22.3 per cent above normal the next morning. Exner<sup>24</sup> stated that the excitement of patients in the first stages of ether anesthesia, as well as the unpleasant after-effects, could be decreased by giving an intravenous injection of a 25 per cent sugar solution 10 to 12 hours before an operation.

Bazett<sup>25</sup> made the interesting observation that cats, after decerebration, may maintain a normal level of blood sugar. This level is not affected by removal or damage to the pituitary. Such animals are able to raise their blood sugar when the circulation is failing just before death.

Storm van Leeuwen<sup>26</sup> reported an observation on temperature effects and irritability which I have failed to confirm. He stated that the optimum rectal temperature for reflexes is 38° C. Reflexes declined above this and entirely failed at 42° C. His studies were made on cats. Single induction shocks served as stimuli.

Endres<sup>27</sup> reports that in natural sleep the blood sugar is 25 per cent above the day values. This variety of work along different lines seems to suggest that there may be a fundamental relation between the level of blood sugar, or spinal

sugar, and the irritability of the nervous system. Since so little is known about the nature of the blood sugar and its regulation, and still less about the irritability of the nervous system and its natural stimuli, any attempt to study this problem is difficult.

#### METHOD

Dogs were used in all the experiments. They were given no food for twenty-four hours before the experiment was begun. No morphine or other drug was used. Ether was administered during the preparation of the animal for nerve stimulation and blood pressure tracings, but was discontinued immediately after decerebration, in most cases. The anterior crural nerves and one of the trunks of the brachial plexus were isolated, ligatured and cut. The central end was stimulated in each case, thus testing the irritability of the reflex arc, since the response watched for was a movement of the muscles of the foot. The readings for the four nerves were averaged.

A storage battery served as a source of current, and the primary circuit contained a spring key, a rheostat, and a milliammeter. The secondary coil was kept at a distance of 7.5 cms. from the primary, and the strength of the shock was regulated by means of the rheostat in the primary circuit. In the earlier experiments the rheostat and milliammeter were not used, consequently the strength of the stimulus was regulated by altering the position of the secondary coil.

Blood pressure records were taken from one of the carotids, and blood samples for sugar analyses were taken from the other. The blood was oxalated and the sugar determined by the Folin-Wu method. Temperature was recorded by a thermometer kept constantly in the rectum. In order to decerebrate, the temporal bone was trephined about one-half inch from the midline, opposite the anterior border of the ear. A glass rod or knife handle was inserted and passed across the brain substance in the midbrain region.

It is easy to point out some of the defects of this method. It is unphysiological to isolate a nerve trunk and to place it across electrodes, stimulating it at frequent intervals. The stimulus must pass through connective tissue, neurilemma and myelin sheath before it can give rise

TABLE I.

Dog 14.									Oct. 9, 1924.
Time	Cms.	Temp.	Sugar	Pressure	Time	Cms.	Temp.	Sugar	Pressure
2:00	19	39.2		202-198	7:30	37	38.9		184-170
2:15	19	39.2	120		7:45		38.9	110	
2:30	27	38.8			8:00	35	39.0		180-152
2:45	28	38.7			8:15	36	39.0	110	
3:00	27	38.3			8:30	40	39.0		176-122
3:15	24	38.2	150	168-160	8:45	39	39.1		
3:30	25	38.4			9:00	37	39.1		
3:45	27	38.8			9:15	36	39.0	100	
4:00	25	39.0			9:30	38	39.0		150-128
4:15	22	39.0	150	190-170	9:45	41	39.0		
4:30	19	39.0	Artificial Respiration		10:00	40	39.0		
4:45	20	39.0			10:15	39	39.0	99	
5:00	33	39.0			10:30	39	39.0		142-124
5:15		38.8	130		10:45	39	39.0		
5:30	38	38.8		204-180	11:00	40	39.0		
5:45	38	38.8		196-166	11:15	41	39.0	100	
6:15		38.8	110	188-160	11:30	39	39.0		118-100
6:45	38	38.8			11:45	39	39.0		
7:00	39	38.8			12:00	40	39.0		112- 98
7:15	39	38.9	110		12:15	42	39.0	100	

to an impulse in the axis cylinder. It is also a question as to how long a time is required for a change in the blood to affect the axis cylinder of nerves. It is desired to develop a method for determining the irritability of nerves in the intact animal under physiological conditions. This method of decerebration is not as desirable as that of Pollock and Davis,<sup>28</sup> but the latter method is attended by great technical difficulties in the dog. The only justification for the present report is that it is an attempt to gain information regarding a supposedly fundamental problem.

## RESULTS

Five of the thirty-six experiments have been selected for this report. In the earlier experiments the decerebration was performed immediately after the preparation of the nerves for stimulation, thus eliminating a control period before decerebration. Further, in the earlier experiments, the irritability is expressed as distance between the primary and secondary coils. The results are presented in the form of tables. In the first experiment reported, the ether administration began at 12:43 P. M. and decerebration was performed at 1:30 P. M.

It will be noticed that the blood pressure remained high until near the end of the experiment. The rectal temperature was fairly constant after the second hour. No injections were given as this was a control. It is evident that the irritability does increase (shown by a greater distance between the coils) as the blood sugar decreases spontaneously.

Table II presents the results of another control experiment, using the later method of stimulation, in which irritability is measured in milliamperes of primary current. Ether administration was started at 10:45 A. M., and decerebration was performed at 11:45.

The blood pressure remained high until the end of the experiment and the temperature was fairly constant. It will be noticed that as the blood sugar decreases, the irritability increases (shown by decrease in amperage of primary current).

It was decided to run a short control period before decerebration. Dr. Luckhardt (of Chicago) suggested continuing the administration of ether for a time after decerebration. Table III presents the results of such an experiment. The ether administration began at 10:05 A. M.

The blood pressure remained high throughout

TABLE II.

Dog 22.									Nov. 14, 1925.
Time	Milli-amps.	Temp.	Sugar	Pressure	Time	Milli-amps.	Temp.	Sugar	Pressure
12:30	32	39.2		200-100	3:30	21	40.0	96	140- 86
1:00	33	39.6	200	190-120	4:00	24	40.1		186-130
1:30	29	39.5	146	134-102	4:30		40.0	66	146- 98
2:00	28	39.5	128	166-112	5:30	23	40.5	72	142- 82
2:30	26	40.0	110	176-120	6:00	21	39.5		120-116
3:00	27	39.8		188-130	6:30	23	39.5	70	80- 40

TABLE III

Feb. 6, 1926.

Dog 29.									
Time	Milli-amps.	Sugar	Temp.	Pressure	Time	Milli-amps.	Sugar	Temp.	Pressure
11:30	30	94	38.8	150-132	2:15	28	103	39.5	130-120
11:45	28		38.8	170-150	2:30	25		39.5	142-130
12:15	33	127	38.8	144-134	3:30	22	107	39.8	138-124
12:30	36		38.8	144-136	4:15	22	88	39.8	142-118
12:45	36	127	39.0	146-140	5:00	22	99	40.2	134-100
1:00	33		39.0	148-142	5:15	Ether discontinued.			
1:15	Decerebration.		Ether continued.		5:45	25	114	41.0	142- 99
1:30	33	116	39.2	120-106	7:15	28	110	42.0	144-118
					7:45	20	97	43.0	76- 58

the experiment until the very end. The temperature steadily increased, reaching the high value of 43° C. by the end of the experiment and yet the reflex arcs remained irritable, contrary to Storm van Leeuwen's findings on cats. The blood sugar was low throughout the experiment, showing clearly that anesthesia is possible with ether, without a high blood sugar, contrary to the author's impression.

Two experiments will be reported to show the effects which accompany insulin hypoglycemia. In Table IV are shown the results of an experiment using the old method of stimulation. (The insulin was furnished, free of charge, by the Eli Lilly Co.) Ether administration began at 8:45 A. M. and decerebration was performed at 9:40.

The blood pressure record was taken, but not preserved.

The systolic pressure did not drop below 120 mm. at any time. The temperature was quite constant. The late samples of blood clotted in spite of the usual amount of oxalate. It will be readily seen that as the blood sugar decreased after insulin, the irritability increased (greater distance between coils). It is just such experiments which keep a discouraged worker going, since they seem to fit in with his impressions so well.

However, all experiments are not so clear cut and it is only fair to report some of the unfavorable ones as well. The last experiment to be reported is another showing the effects of insulin hypoglycemia, using the later method of stimu-

lation. Ether administration started at 10:45 A. M.

The blood pressure was quite irregular after decerebration, but did not fall to a low level until the very end. The temperature was a bit variable. An increase in irritability precedes the fall in blood sugar. However, after the giving of insulin the irritability shows a further increase. Some may claim that decerebration itself is followed by an increase in the irritability of the reflex arcs, as it seems in this case, but other experiments do not support the claim. There were numerous experiments in which decerebration was not followed by an increase in irritability and the question may need further investigation.

Two experiments were done in which glucose was continuously injected for a few hours. Even when the glucose reached a very high value, no decrease in irritability could be demonstrated by this method. It may be that if there is a relationship between the level of blood sugar and irritability, it holds for only the ranges which occur normally in the body and that an increase above the renal threshold has no further effect on irritability. A lowering of blood sugar other than by insulin, or spontaneously during a long experiment, has not yet been tried.

#### DISCUSSION

The question as to how the injection of glucose can stop convulsions remains unanswered as does the question as to why convulsions occur

TABLE IV

April 9, 1924.

Dog 3.							
Time	Cms.	Sugar	Temp.	Time	Cms.	Sugar	Temp.
10:30	32		38.5	11:45	37.5	91	38.0
10:45	32			11:55	35.5	50	38.0
10:55	32	166	38.5	12:10	32	50	38.0
11:00	100 units insulin			12:22	29.5	47	38.0
11:05	36	153	38.0	12:35	33		38.0
11:15	27.5	143	38.0	12:45	33		38.0
11:30	30.5	107	38.0	1:00	45		38.0
11:37	39.0	97	38.0	1:42	53.2		38.0
				2:30	62.5		38.0

TABLE V

Nov. 17, 1926.

Dog 36.

Time	Milli-amps.	Temp.	Sugar	Pressure	Time	Milli-amps.	Temp.	Sugar	Pressure
12:15	96	38.0	177	150-130	3:15	33	37.5	182	148-112
12:30		38.0	178	140-110	3:30	40	37.5		144-120
1:00	84	38.0	206	136-110	3:45	39	37.5	127	150-120
1:15	79	38.0		138-110	4:00	34	37.5		156-130
1:30	88	38.0	217	140-110	4:15	32	37.5	104	140-120
1:35	Decerebration. Ether discontinued.				4:17	100 units of insulin.			
1:45	92	38.0		104- 92	4:30	27	38.2		110- 86
2:00	51	37.7	230	120-100	4:45	28	38.7	98	120-100
2:15	51	37.7		130-100	5:00	28	39.2		110- 86
2:30	46	37.7	230	140-110	5:15	26	39.2	85	114- 86
2:45	46	37.6	238	134-110	5:30	23	39.6		130-104
2:47	100 units of insulin.				5:45	23	39.9	54	130-100
3:00	37	37.5		140-114	6:30	21	40.0		70- 40

when the blood sugar falls to a low level. Many types of anesthesia show a high blood sugar, yet we are not justified in saying that this causes the decreased irritability of the nervous system since some types of anesthesia, and even ether anesthesia occasionally, show no alteration in blood sugar. Why do we grow lethargic after meals—is it due to circulatory changes alone, or does the increase in blood sugar play a part? And why are we irritable and wakeful when we are hungry? What is the significance of a higher blood sugar during natural sleep and of increased blood and spinal fluid sugar in most cases of lethargic encephalitis?

If sugar bears no relation to irritability, what constituent of the blood is so altered by the injection of glucose as to cause an almost instantaneous cessation of convulsions? Is it a change in phosphorus, calcium or hydrogen ion concentration? The question is as yet not settled, but some of the above factors may be significant.

#### CONCLUSIONS

1. It is probable that a fundamental relation exists between the blood sugar level and irritability of the nervous system.
2. Even with the present unsatisfactory method of investigation, the irritability of the reflex arcs of decerebrate dogs was found to increase as the blood sugar decreased. This occurred whether the decrease occurred spontaneously or after insulin.
3. It is believed that decerebration, as a rule, does not cause an increase in irritability of the reflex arcs unless the blood sugar falls simultaneously. Dog No. 36 proved an exception so this will bear further study.

4. The irritability of the reflex arcs did not disappear even when the rectal temperature rose to 43° C.

5. Attempts to decrease the irritability by continuous injection of glucose were unsuccessful. It may be that the relation holds only for the limiting values that occur normally in the body.

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#### PREVENTION OF COLDS BY ULTRA-VIOLET RADIATION

In 1926, Barenberg, Friedman and Green found that infants exposed to ultra-violet radiation improved in general health during the first month of treatment but contracted an increased number of colds during the second, third and fourth months. Accordingly, Maughan and Smiley attempted to administer a quantity of ultra-violet radiation equivalent to that to which the ordinary city dweller is exposed during the summer. They conclude that irradiation resulted in a reduction in the frequency of colds. Barenberg and Lewis have completed further experiments in which over-radiation was guarded against. Their results were no better than before. On the one hand are well controlled experiments with negative results in which the dosage was large. On the other hand are imperfectly controlled experiments and success which the investigators attribute to low dosage. Positive statements, faith and investments may well await further evidence. (*Jour. A. M. A.*, February 18, 1928, p. 547.)

#### DIETARY DEFICIENCIES AND INFECTION

A study has been made attempting to correlate the production of rickets with the susceptibility to tuberculosis. In the white rat, rickets may be produced with comparative ease. On the other hand, this animal is highly resistant to tuberculosis when the organisms are given subcutaneously. Young rats were fed on rations presumably adequate with the exception of calcium and the anti-rachitic factor. Rickets regularly appeared, more readily in cloudy weather than in bright. In the group of these animals injected with tuberculosis organisms the disease could be demonstrated. The series given the defective ration alone developed rickets but no tuberculosis, while doses of the infecting organisms many times large than those used in the rachitic group failed to induce tuberculous lesions in a number of rats given an adequate ration. Similar results were obtained when the experimental ration lacked only vitamin D for several generations. Rickets was produced and with it a susceptibility to tuberculosis. (*Jour. A. M. A.*, February 4, 1928, p. 386.)

## ACUTE POLIOMYELITIS—A CLINICAL REPORT\*

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THE opportunity to study infectious diseases to advantage comes chiefly through their observation in special isolation hospitals and, as was the case during the war, when it is possible to observe large groups of individuals under control. A great storehouse of information, private practice, is often allowed to go unused, or to be partially and superficially used.

The writer has felt that when opportunity presents, as for example in the presence of an epidemic, use should be made of the cases occurring in private practice to add to the general store of knowledge. Particular emphasis is given this point in an effort to remind busy practitioners that they probably have something worth while, which they could pass on to their fellow physicians.

With modern methods of study and because of the newer knowledge thereby gained, the handling of certain diseases has been rather highly standardized. This is particularly well shown in the case of diphtheria. There are many serious diseases, however, regarding which the world impatiently seeks information. Discovery that will help bring about their control will be very welcome.

Acute poliomyelitis belongs to the group of diseases of uncertain etiology. So far the infecting agent has not been agreed upon and no certain means exists to prevent death or life-long crippling.

This disease has been an unwelcome visitor throughout the world, at various times, making its visitations with rather clear-cut epidemic waves. Following each epidemic trails a group of unfortunate cripples who are responsible for the horror with which the disease is regarded and who point clearly the fact that as yet mastery of the condition is not within the grasp of medical science.

The work in the research laboratory in connection with poliomyelitis is still sufficiently removed from the handling of this condition in private practice so that the two sources of in-

formation are not as well correlated as might be hoped.

When a small epidemic of acute poliomyelitis visited southern Minnesota the writer planned to examine the cases from the point of view of as great uniformity as possible and as extensively as time would permit. This paper incorporates the results of the observations made, and is offered for any suggestion it may hold and with the regret that more detailed study could not have been undertaken.

The cases in the series numbered fifty-one and were part of the group occurring in Winona County between June and October, 1925, and were all seen during the acute or primary stage of the disease. During this same period the state was visited to the extent of nearly a thousand reported cases, both frank and suspected. It would seem that the beginning of this epidemic in Minnesota was in Winona County, one of the gateways to the state from the East.

Nothing of note preceded the outbreak except that during a mild spring there had been an unusually large number of cases of general respiratory and gastro-intestinal infections. Being popularly referred to as "stomach flu" these cases did not differ particularly from the infections of the two tracts which have been encountered in the same locality for several years and at various seasons of each year.

It was with some interest, after the epidemic had started, that we remembered the rather large number of cases seen during May and June of the syndrome designated epidemic diaphragmatic pleurodynia<sup>1</sup> which has been described by various observers. This rather striking picture was again observed during September and October as the epidemic waned.

While this paper was being prepared the same condition was prevalent in this locality during the late summer (1926) coincident with the appearance of several cases of abortive poliomyelitis.

Pleurodynia being an acute general infection with nerve trunk disturbance, in all probability, the question is raised as to whether this might

\*Read before the annual meeting of the Southern Minnesota Medical Association, Austin, Minn., Sept. 30 and Oct. 1, 1927.

be an atypical form of poliomyelitis occurring when the infecting agent or its toxin is of low virulence, and showing somewhat different selective involvement.

#### DIAGNOSIS

There is considerable disagreement among physicians when discussing mild or obscure conditions and there is wide variance of opinion as to what constitutes definite evidence for diagnosis of certain disease entities.

The early symptoms of cases of acute poliomyelitis are often so mild or so similar to other infections of a less serious nature, that relatively little dependence can be placed upon them. Likewise the clinical findings many times are of such type that great care must be used in their interpretation.

It is unfortunate when one has had a case under observation for several days without having done a lumbar puncture, if there then appears typical weakness or paralysis. We regret to state that this happened in three cases in this series.

It is obviously inferred that we must allow the laboratory to help us very early in the course of the disease. Laboratory assistance is chiefly from examination of the fluid secured by spinal puncture. Blood and urine examinations at the present time offer nothing distinctive and bacteriological studies have not yet reached a diagnostic stage. Considerable indirect assistance may be the outgrowth of work now being done to develop a skin test for susceptibility and to find cultural methods for determining carriers or infected cases. This presupposes the acceptance of a definite causative organism that can be readily handled.

The value of the lumbar puncture in the course of all cases, suspected or frank, is inestimable and will be alluded to again in this report. We feel that it is the most important single weapon in the handling of the disease that has as yet been advanced.

In this report cases are designated as paralytic forms of poliomyelitis when they present evidence of a general infection associated with paralysis, either transient or permanent, and in which the spinal fluid examinations, if made, are typical of this disease.

Non-paralytic or abortive cases are those with a clinical picture closely paralleling the cases with peripheral nerve lesions and in which the lumbar puncture findings are similarly abnormal.

The encephalitic type of the non-paralytic cases, seen in this series, presented the greatest difficulty in diagnosis and occasioned the most controversy when discussed. Encephalitic forms include cases occurring during the epidemic with symptoms referable to the central nervous system, which were strikingly relieved by lumbar puncture. The spinal fluid found in these cases will be discussed further on in this paper. Cell counts of over ten per cubic millimeter are not included in the encephalitic group. This, however, is a purely arbitrary division.

That the encephalitic cases have long been recognized, and clearly so, is shown in an historical note in an article by Lucas<sup>2</sup> where he states that the recognition by Strumpell as early as 1884, that there was a true cerebral form of poliomyelitis, constitutes one of the most important contributions to the study of the disease.

It has been fairly generally accepted that cases with symptoms and signs suggesting encephalitic involvement occurring in the course of an epidemic of acute poliomyelitis should be looked upon as forms of this disease unless associated with some other recognized disease condition.

#### THE CLINICAL PICTURE

No attempt will be made in this report to enumerate the classical symptoms of the disease. The intent will be to point out the more important symptoms noted in this group of cases. The protocols of the series show certain marked similarities.

Among the cases that died, the children, all being old enough to give account of their feelings, complained of definite headache at the onset. All wanted to lie about, were without appetite, and on the night preceding the day of onset all slept well. The following day they continued to be drowsy and developed backache, stiff neck, pain in the neck and vomiting. Fever and thirst were present as expected.

In many cases it is very difficult to determine just when the onset occurred because of the fact that a number of cases were ill for a day or two, and then seemed to return practically to normal. The more pronounced symptoms would then present, and the course grow progressively more severe. Draper<sup>3</sup> has called attention to this feature and referred to the cases as of the "dromedary" type.

In the whole series the most characteristic

TABLE 1  
ACUTE POLIOMYELITIS  
Classification of Cases

		Sex		Age grouping (yrs.)					
		Male	Female	1	1-2	2-5	5-10	10-18	18 and over
Paralytic (including deaths) .....	21	8	13	1*	1	11	3	4	1
Deaths .....	4	0	4			1	1	2	
Non-paralytic .....	9	6	3	0	0	4	2	3	0
Encephalitic .....	21	9	12	0	0	3	5	2	11

Deaths: Ages 4-7-11-12.

\*Age, 6 mos.

complaints were headache, pain in the neck and back, pain in the extremities, lassitude and slight fever. Diarrhea was seen only once, vomiting was not conspicuous, convulsions occurred in only one case. Excessive tremor, with periods of profuse perspiration lasting hours at a time, was an outstanding feature in two cases in the encephalitic group.

When the patients were examined, the signs were often very mild and difficult to establish as due to poliomyelitis. All of the fatal cases had evidence of bulbar paralysis when first seen as well as definite loss of muscular function; one case had facial involvement; two, involvement of both arms and both legs; and in the third there was extensive involvement of back, face and one lower extremity.

One of the deaths was a case seen by us on the second day of an acute illness which was ushered in with headache, fever and dizziness and which was thought to be tonsillitis. A nasopharyngeal swabbing was made because of the prevalence of poliomyelitis in the vicinity. This gave a negative precipitin test with Rosenow's serum. This was the last the patient was seen by the writer. Further history states that for three days she seemed practically normal and played out of doors as usual. Then there followed a return of the preëxisting symptoms and, in addition, stiffness of the neck. The following day there was extensive paralysis. From the description it was obvious that she had had respiratory failure as well as paralysis involving both arms and both legs. No lumbar puncture was done, nor was serum administered.

Among the non-fatal cases several things were noted with considerable regularity. We were impressed with the facial expression which in many cases was very similar to that seen in moderately severe scarlet fever. The cheeks were flushed and there was a pronounced circumoral and circumnasal pallor, giving the face a drawn

appearance. Stiff neck was quite consistently recognizable in all but the younger patients. Pain in the neck, and especially on anterior flexion of the head, was quite marked. Other signs of meningeal irritation, while present in quite a number of cases, were not marked. Kernig's sign was frequently absent though Brudzinski's was present in about half of the cases. Tenderness in handling many of the younger patients was apparent. Opisthotonos was seen but twice. In one of these cases the patient had spastic involvement alone. There was no toxic skin rash observed except when the various reactions to serum began to be noticed.

In the encephalitic group the symptoms were principally severe frontal or parietal headache, pain in the neck and back, sore throat and fever. Marked diarrhea was noted in one case. These cases were for the most part seen on the first or second days of the illness and the most characteristic finding was stiff neck with severe pain on anterior flexion of the head.

#### SPINAL PUNCTURE

The value of spinal puncture is both diagnostic and therapeutic. As soon as a case is seen in which acute poliomyelitis is even suspected, lumbar puncture should be done. There is practically no contraindication to its performance for the purpose of securing spinal fluid for examination.

Unfortunately there is often an unwillingness on the part of some physicians to do spinal punctures, possibly because they have had little opportunity for practice. The test is extremely simple and with just a little care will practically always yield results and these without danger to the patient.

Out of fifty-one cases in this series, forty-five punctures were done on forty-four patients. In sixteen of the forty-five punctures, chloroform anesthesia was used, but we feel that with pos-

sibly a few exceptions the cases can be handled just as well without anesthesia.

Inasmuch as purulent fluid is not being anticipated during an epidemic of poliomyelitis the smaller needles should be used. Special needles of 21 gauge were used on children and of 18 gauge on the adults. The fluid should be collected in a series of three tubes which have previously been cleaned and sterilized. It is desirable to stopper promptly with sterilized corks, and arrange to have the fluid examined as soon as possible.

The peculiarities of the fluid in this disease have been extensively studied by Neal, Levinson, Gay and Lucas, Fraser and others and their work shows rather wide variation in the findings. Despite numerous monographs on the subject there is still some doubt as to the limits of normality and the findings which are pathological.

As a reasonable guide for practical work we may take Levinson's statement that anything over 10 c.c. removed under pressure represented by an unimpeded flow from the needle of more than 10 drops a minute, may be looked upon as abnormal. This applies in the case of a patient who is not struggling, vomiting, coughing or crying or in other ways raising the pressure.

The use of a manometer is a refinement which gives a much more accurate indication of the pressure but is not necessary and renders the procedure more complicated. No manometer readings were made in this series.

In addition to the data contained in the above table, the following general observations were made: the fluids were clear except in counts above 300 cells, where a ground-glass appearance was noted; a straw-colored fluid was encountered in one case, which was the only one in the series with spastic paralysis alone; macroscopic blood was noted in three cases in the first tube but was sufficiently absent in the third tube so that it did not interfere with cell counting.

Many of the fluids which showed counts of fifty cells or over exhibited a pellicle on standing at room temperature. Many cases, regardless of the cell count, showed foam after shaking, which persisted for some time. No definite explanation has been offered, but this phenomenon is associated with the protein content of pathologic fluids.

Globulin, as determined by the butyric acid test of Nagouchi, was present in practically all of the

fluids though in relatively small amounts even in cases with moderately high cell counts, and whether paralysis was present or not. It was present in slight amounts in the encephalitic groups even where no cells or a normal cell count were found. Pandy's test is convenient for determining the presence of globulin and is supposed to be very sensitive.

The highest cell counts in this series were in non-paralytic cases and these were considerably higher than the counts in the fatal cases. The mononuclear cells predominated very definitely irrespective of whether the case was pre-paralytic or whether paralysis had taken place. This is consistent with general experience for in but few of these cases were the punctures done in the first two days of illness.

A surprising feature was the nearly total absence of cells or at most a normal count of three to five, in many of the encephalitic cases. This occurred despite the fact that there was increased globulin and the average quantity of fluid withdrawn was higher than in any group except the deaths, and the pressure was up to the average for the whole series.

The low counts make many question the right to include these as poliomyelitic cases, but in support of our contention let it be said that a number of observers have noted normal cytology with or without slight chemical change. Neal<sup>4</sup> says that the spinal fluid findings may be "so slight and the fluid so nearly approach normal that it is difficult to make a definite statement in regard to the findings."

Levinson<sup>5</sup> points out that at the present state of our knowledge no positive diagnosis can be made of poliomyelitis by the fluids findings alone. It must not be forgotten, however, that when the withdrawal of spinal fluid yields 20 to 40 c.c. under markedly increased pressure and the patient's symptoms promptly abate, such cases exhibit a definitely abnormal condition resulting from changes in the arachnoid space.

A reducing substance was present in all fluids examined with Benedict's solution and it seemed to be diminished somewhat in the cases with the highest cell counts. No quantitative examinations were made.

#### TREATMENT

Treatment in all cases was carried out in the patient's homes as no facilities were available in

TABLE 2  
LUMBAR PUNCTURES

Cases		No. having punctures	Without anesthesia	Average am't fluid	Pressure average grade	Cells average
Paralytic (including deaths).....	21	14	7	c.c. 19	1.4	91
Deaths .....	4	3	3	28	2.3	168
Non-paralytic						
Abortive .....	9	9	5	21.5	1.6	266
Encephalitic .....	21	22*	16	25	1.5	3
Whole Group .....	51	45*	31	22	1.5	85

N. B. Pressure is estimated on the basis of 0 normal, and 1 to 4 degrees of increase.

\*One patient had two punctures, the second not being included in the average.

the vicinity for hospital care. Obviously this type of case could be best cared for in an isolation hospital. In lieu of this we were obliged to arrange the patient's home to meet our needs.

Treatment of the cases in this series included the usual routine for all acute infectious diseases, and in addition the writer made use of lumbar puncture to reduce pressure. It was our impression throughout the epidemic that this one thing was important above all else; not merely the taking of a small amount of fluid for examination but the reduction of the pressure at one tapping to as near normal as possible.

It is difficult to convey in words the picture of these patients after the spinal fluid has been removed. In reading the protocols numerous references are made to the great relief experienced by the patients, particularly of headache, pain in the back and neck. Several times the patients would resume the supine position after puncture, and with a smile express their appreciation for the marked relief experienced.

The interesting report by Montgomery and Cole<sup>6</sup> on spinal drainage appeared about the time these cases in our series were being seen. We agree with the main contention in their paper with regard to the value of drainage but hoped to show that one adequate drainage would produce as satisfactory results as repeated spinal drainage. In their report as it appeared in the indicated publication no mention is made of the definite amounts withdrawn at any puncture, it always being referred to as a large amount, and in the tables as from one plus to three plus. The statement is made that from three to four punctures were necessary before the pressure had definitely subsided.

In one case in our series a second puncture was done after a three day interval and the fluid was found under normal pressure and only 5

c.c. could be obtained. The cell count had increased from normal to twenty-five and there was a definite increase in globulin.

The second feature of treatment that was undertaken was the use of the serum prepared by Dr. Rosenow of the Mayo Foundation. It was used in twenty-four cases in all; in sixteen before paralysis appeared and in eight after paralysis was present.

Of the patients receiving serum before paralysis was present, there were two who later developed transient and one permanent paralysis. Of the cases where paralysis was present when serum was given two died, three cleared entirely, one improved and two have extensive involvement at the end of two years. Of six patients with paralysis who did not receive serum and on whom no spinal puncture was done, three cleared entirely and three have paralysis persisting at the end of two years.

It may be fairly said that no conclusion regarding this serum should be attempted from a series of this size. Much more important is the conclusion reached by Rosenow in a summary of a large number of these small series grouped together. Such a report is incorporated in a recent paper by Rosenow and Nickel<sup>7</sup> and includes the series here presented. Rosenow's figures certainly would indicate that the patient having serum has a better chance of living and is less liable to paralysis than when serum is not given.

The objections to serum are practically all unimportant. We had the unpleasant experience of having a fairly high percentage of severe serum reactions. This seems to vary with the different bleedings of the same horse and would probably be reduced considerably were use to be made of concentrated serum.

In the mind of the layman a severe serum reaction, especially serum sickness, occurring after

TABLE 3

RESPONSE TO TREATMENT

Type of case	Type of Treatment	No. cases	Relief Symptoms—			Effect on Paralysis—	
			marked	mod.	slight	Paralysis cleared	Persist at 2 years
Paralytic	Lumbar Puncture .....	3	2		1	1	2
	L. P. and serum.....	7	3	4		4	3
	Neither .....	6				3	3
	L. P. and mercurochrome.....	1			1		1
Abortive	Lumbar Puncture .....	1		1			
	L. P. and serum.....	8	4	4			
Encephalitic	Lumbar Puncture .....	15	11	3	1		
	L. P. and serum.....	6		3	3		

N. B. Deaths not included above, 4: three had lumbar puncture, and of these, two received serum. One case had neither form of treatment. This last case was not seen by us after the second day of illness and died about ten days later. No case was given serum without a lumbar puncture being done.

use of this agent in a child showing no paralysis, creates an unfavorable reaction. If the child is paralyzed there is no objection raised. We would not, however, let such objection interfere with our use of serum in diphtheria or meningococcic meningitis.

In only a few cases was serum used as extensively as Rosenow advocates and that fact should be considered. In practically all of these cases the serum was administered after the completion of lumbar puncture and the decided improvement noted in the patients, especially the prompt relief of their most distressing symptoms, preceded the administration of the serum. Obviously no sudden benefit from the serum could be expected, particularly as judged from the immediate effect on symptoms.

The care of infantile paralysis cases after the subsidence of the acute febrile stage is a matter of major importance and because of neglect at this period we find hundreds with irremediable crippling.

The treatment of these patients consists in complete rest and protection of the affected parts during the early weeks and until disappearance of all tenderness. In this, most parents will coöperate and there is not a great deal of disagreement among authorities as to the wisdom of the procedure.

It is after the acute stage and during the interval until the case is placed in the hands of the orthopedic surgeon that the general practitioner has a genuine responsibility. While most orthopedic surgeons recommend long rest with maintenance in good position, with bathing and possibly light massage, it is here that the terror-stricken parents in many cases refuse to remain

passive—and they demand that something more active be done to restore function which in many cases will never be restored.

If the physician in general practice cannot control his case during those vital early months he will do well to recommend orthopedic care and ask to be excused from further responsibility.

Mobilization either by full or split cast and splints will be effective in so far as they are left in place. The first mentioned will be left on, but has the disadvantage of possibly causing more atrophy than where the affected part can be handled occasionally and bathed.

Of seventeen cases with paralysis, three made complete recovery without any apparatus, recovery occurring within a few weeks. Of the remaining fourteen, six had suitable apparatus at all times and the families followed the advice given in detail. Of these six, four cases were returned to normal function within several months and the other two were showing marked improvement at the end of a year. The remaining eight either had no apparatus, failed to follow advice or adhered only in part to the treatment ordered. Of these, six still showed marked residual paralysis when last heard from; one has completely recovered, and one has slight residual. Sadly enough, the cases most needing treatment constitute a large majority of those who would not accept the treatment indicated.

COMMUNICABILITY

The evidence in this study regarding communicability is quite extensive and cannot be presented in concise form. In nearly every case there was illness in others in the home or contact with other known sick individuals. Frequently

TABLE 4

	No. cases	Degree Paralysis		End Result		Unfavorable	
		M.	S.	Favorable Well	Imp.	No. cases	%
Cases paralyzed .....	17						
Spontaneous recovery without apparatus.....	3						
Suitable apparatus used and advice followed.....	6	4	2	4	2		100
Suitable apparatus used and advice followed in part .....	3	2	1	1		2	66
Neither suitable apparatus used nor advice followed .....	5	4	1		1	4	80

several cases were in close proximity in the same neighborhood, and occasionally what appeared to be a real problem resolved itself into a simple one when it was discovered that several of the cases had been to some family gathering or at a picnic where they had established contact a short time previous.

It is interesting to note that after the families in the city had been urged, through extensive newspaper publicity, to keep their children at home, the cases were less numerous, and the interesting observation was made by the local health officer that no case of frank paralysis was reported as the result of contact with cases that had been recognized and placarded.

Winona Clinic.

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# CASE REPORTS

## OSTEOMYELITIS OF THE SUPERIOR MAXILLA IN INFANTS\*

REPORT OF TWO CASES

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*Saint Cloud, Minnesota*

The first case of osteomyelitis of the superior maxilla in infants reported in the literature was by Douglas in the *British Medical Journal* in 1898. The first case reported in American literature was by Posey of Philadelphia in 1912 in the *Journal of the American Medical Association*.

In 1922 Dr. E. Marx, in the *British Journal of Ophthalmology*, reviewed the thirty-five cases reported up to that time, adding three cases of his own. Since that time there have been numerous cases reported both in the American and foreign literature, and it would seem that cases of this type are not so rare as it was at one time thought.

**Etiology.**—The etiology of the disease is still doubtful. Whether it is caused by an infection of the tooth germs from some condition in the mouth or whether it is caused by a suppurative condition of the maxillary sinus, I am unable to state. The Koerner Clinic, which seems to have investigated these cases closely, hold to the view that it is caused by an infection of the unerupted teeth, and with that view the majority of old and new writers on the subject agree.

Paunz of Budapest, in the *Zeitschrift für Ohrenheilkunde* in 1926, claims that all cases are due to an antrum infection, and many agree with that position. Until more detailed investigation of the antrum early in the disease is done both by *x-ray* and puncture with washing, the question of its etiology will not be settled.

**Pathology.**—The process consists of an osteomyelitis of the superior maxilla, the end-result being sequestration of the superior maxillary bone.

**Course of disease.**—The course of the disease is as follows: The child becomes suddenly acutely ill, cries almost constantly, with prostration, high temperature, occasional convulsions, generally some bowel disturbance, and marked swelling of the alveolar process and region of the face beneath the eye on the affected side. Later there is a discharge of pus from the nose through

the pocket of the expelled tooth germs and at the lower edge of the orbital cavity. The eye on the affected side usually shares in the inflammation, at least to the extent of a severe conjunctivitis. Later, sequestra are formed.

The final result, when the child lives, is a considerable deformity of the face and palate with loss of teeth, both temporary and permanent, on the side involved.

**Case 4.**—Baby Ralph G. became acutely ill four months after birth with what the doctor thought to be a coryza and cough. He had a high temperature, convulsive twitching, and a bowel disturbance, complicated by what appeared to be a cellulitis of the orbit. At this time the child was under the care of another physician, and my first contact with the patient occurred after the baby had been sick seven weeks.

At this period the findings were as follows: There was a fistula beneath the orbit and two fistulae in the alveolar process discharging pus. There was also a large quantity of pus in the nose. A probe could be passed from the fistulae in the alveolar process and also from the fistula below the orbital cavity into the antrum. The palate was depressed on the affected side and this has persisted.

I passed a trocar into the antrum and washed pus from all the fistulae. Thinking to improve the drainage, and at this time thinking the causative factor to be a sinusitis, I made an opening into the antrum through the nose for the purpose of drainage, with apparent benefit to the child. In about a week the temperature dropped to normal, and the only after-care received was the removal of sequestra as they formed. About a month later the patient developed a periostitis of the radius which cleared promptly after drainage.

Some deformity of the lid and also of the palate persists, with loss of teeth on the affected side, but in other respects the child appears healthy and vigorous.

**Case 2.**—The second patient, also a boy, from Wadena, was first seen in consultation in the spring of 1925.

At the age of about four weeks he seemed to develop a coryza. Soon a swelling was noted beneath the orbits, which was opened by the family doctor. In the meantime his mother developed a double mastitis, becoming infected from the child. The temperature remained high for a long period, and when I first examined him about three months after the onset of the disease, there was a fistula beneath each orbit. Those in the mouth were apparently healed, but still some pus persisted in the nose. Sequestra were removed from the little patient as they developed.

Nothing new is offered in this paper, but it seems to the author to be well worth while to report two cases of a very rare disease.

\*Read before the annual meeting of the Northern Minnesota Medical Association, St. Cloud, Minnesota, Sept. 12 and 13, 1927.

## OVARIAN CYST\*

## REPORT OF CASE

MARTIN S. SICHEL, M.D.  
Minneapolis

E. W., a white female, aged 64, was admitted to the Minneapolis General Hospital on January 5, 1928. The past history was essentially negative. There had been six normal pregnancies; no miscarriages. The menopause occurred sixteen years ago at the age of forty-eight.

The chief complaint on admission was enlargement of the abdomen. The enlargement was first noted one year ago, there being a gradual increase during the first eight months and a more rapid increase in the last four months. The abdomen had finally reached a size large enough to make walking difficult and reclining uncomfortable. Associated symptoms were weakness, slight loss of weight, shortness of breath on exertion, and swelling of the lower extremities.

good quality, rate 80; the blood pressure was 155/80. The lungs were normal; both diaphragms were slightly elevated. The abdomen was the site of an enormous tumor, entirely filling both the pelvic and abdominal portions (Figure 1). The contour was round and symmetrical; there was a fluid wave present but no free fluid in the flanks. The circumference of the abdomen just above the umbilicus measured 142 cm; the distance between the xiphoid and the symphysis pubis was 65 cm. There was edema of the lower abdominal wall. Pelvic examination revealed a relaxed pelvic floor with a marked rectocele. The cervix was normal; the corpus was small, senile, and pushed far anterior by the tumor. The adnexa could not be palpated, the tumor having grown out of the lower portion of the pelvis. Both lower extremities showed a moderate amount of pitting edema below the knees; the reflexes were equal and active.

A catheterized specimen of urine was negative. The hemoglobin was 100 per cent (Sahli); R.B.C. 4,610,000; W.B.C. 10,600; polymorphonuclears 65 per cent, lym-

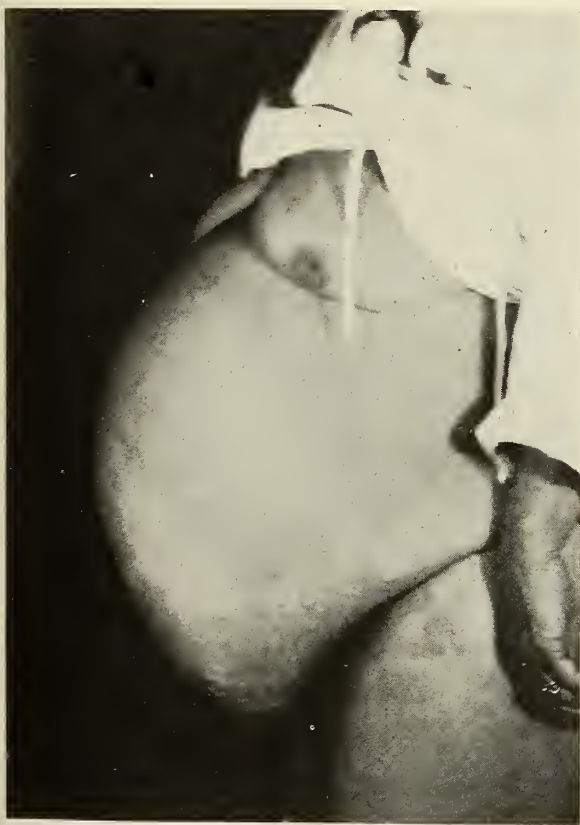


Fig. 1. Lateral view of the patient with large ovarian cyst before operation.

Physical examination showed an elderly female in good general condition, weighing 247 pounds. The head and neck were negative; all the teeth were missing. The heart was well within normal limits; there were no irregularities or murmurs; the pulse was regular,

\*From the Gynecological Service of Dr. F. L. Adair at the Minneapolis General Hospital.



Fig. 2. The ovarian cyst weighing 39.5 pounds removed at operation.

phocytes 35 per cent. The Wassermann reaction was negative; the bleeding time two minutes and the clotting time four minutes.

A diagnosis of a benign ovarian cyst was made; it was impossible to decide from which adnexal region it originated.

At operation the tumor was found to be an ovarian

cyst with the pedicle on the right side. The left ovary was normal. There was no free fluid in the peritoneal cavity. There were adhesions to the anterior parietal peritoneum but not to any of the viscera. The adhesions were separated and the cyst removed "in toto." The pedicle was then ligated and the abdomen closed in the usual manner. Ethylene anesthesia was used throughout; during the course of the operation 500



Fig. 3. Photomicrograph of cyst wall showing the typical columnar epithelium with its vascularized stroma.

c.c. of 10 per cent glucose solution was given very slowly by the intravenous route. There were no signs of distress during the release of the intra-abdominal tension.

The cyst was found to be thick walled, fairly symmetrical and weighed 39.5 pounds. It measured 35 by 33 by 26 cm. (Figure 2). It contained 16 liters (4 gallons) of chocolate colored pseudomucinous fluid. There was one large cavity with several smaller ones and numerous small intramural cysts. The wall consisted of vascularized fibrous tissue, containing occasional small intramural cysts. The lining epithelium consisted of high columnar non-ciliated epithelium, in some places almost flattened due to pressure from the cyst contents (Figure 3).

Convalescence was uneventful, the wound healing by primary union and measuring 21 cm. in length; the contour of the abdomen had almost returned to its normal shape. The weight two and a half weeks after operation was 188.5 pounds, a loss of 59.5 pounds. The patient was discharged in good condition on the nineteenth day.

This case represents a benign unilateral ovarian cyst which can be classified as a hemorrhagic pseudomucinous cyst-adenoma. This is not the true Sampson type of chocolate endometrial cyst; it differs in that the lining epithelium is columnar, whereas in the Sampson cysts the epithelium resembles closely the endometrial lining of the uterus, being composed of a lining epithelium and glandular structures embedded in a stroma. It is of interest and reported for its size and pathological classification.

## CARCINOMATOUS CYST OF THE PANCREAS

### REPORT OF CASE

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Simple cyst of the pancreas is quite rare and carcinomatous cyst much more so. In 1920, Judd reported forty-one cysts of the pancreas seen at the Mayo Clinic up to that time, of which two were malignant. In 1924, McWhorter was able to collect nineteen cases from the records of the members of the Chicago Surgical Society and three of these were malignant. On account of its rarity I am reporting this case of carcinomatous cyst of the pancreas seen late in 1927.

A. F., a male aged 79, was seen October 25, 1927. He was a well preserved man for his age and had been in good health until about ten months before, when he began to occasionally vomit without pain after eating a large meal. Three or four months before coming under observation he began to lose a little in strength, to tire more easily and to become short of breath on exertion. Only one month before, his ankles began to swell after being on his feet for a few hours and he noticed that his abdomen was increasing in size. His appetite was good, he was gaining a little in weight, bowels were regular and he had only occasionally a little pain in his upper abdomen.

General examination revealed a well nourished man of seventy-nine. There was marked dental caries, no evidence of jaundice; the heart was enlarged slightly to the left, the pulse rate 96 with an occasional irregular beat. The lungs showed evidence of slight congestion at both bases. The abdomen was large and the skin over it tense and the lower limbs were markedly edematous to the knees. The first impression confirmed the patient's own diagnosis of dropsy. Palpation of the abdomen, however, revealed clearly that the enlargement was not due to free fluid in the abdomen but that a cystic mass occupied the entire upper abdomen and extended downward below the umbilicus. This might have been mistaken for an enlarged liver. The systolic blood pressure was 190, diastolic 90. The urine was normal except for a trace of bile; the Wassermann negative, hemoglobin 80 per cent, white blood cells 8,200.

On rest and digitalis for a few days no change was noticed. On Nov. 12, 1927, bloody fluid was aspirated from the cystic enlargement. The fluid did not digest protein in the Metts tubes.

On Nov. 26, 1927, under local anesthesia a small upper midline incision was made and the wall of the large glistening ivory colored cyst which presented was sewed to the peritoneum. After aspirating 3,000 c.c. of bloody fluid, a tube was fastened into it. The fluid at this time and on several later occasions failed to digest protein. Some 500 c.c. of fluid drained daily and gradually became less bloody, but after a few days a lot of foul smelling necrotic tissue began to come through the tube also.

The patient seemed little disturbed by the operation

at first, the swelling left his legs, his shortness of breath was relieved and in a few days he was up and around the hospital. But he gradually lost strength, did not care to eat, became mentally dull and on January 1, 1928, the entire right side became paralyzed. After being unconscious for two days, he died on January 3. The urinary output had remained good up to the time he became unconscious and the blood urea had remained normal. Unfortunately no blood sugar determination had been made.

Post-mortem examination revealed a cyst about 10 inches in diameter in the collapsed state, unattached to the parietal peritoneum except where it had been sewed and extending downward between the stomach and colon to its origin in the head of the pancreas. The stomach had been pushed upward into the splenic area. The wall of the cyst was about .75-inch thick, lobulated and meaty in character with sloughing tissue

on its inner surface. Microscopically the sections revealed "dense masses of atypical cells invading all parts of the sections. Areas of fibrosis and lymphocytic cellular infiltration are present." The pathologist's diagnosis was carcinoma of the pancreas of relatively low grade malignancy.

Of the two cases reported by Judd, one lived one month after operation and one lived six months. Of the three cases reported by McWhorter all were dead in three months, though drainage in two cases and simple aspiration in one was all that was done. So while the prognosis in simple cyst of the pancreas is very good even with simple drainage, in carcinomatous cyst it is bad. Any attempt to remove a growth of this kind in toto would be likely to result in disastrous hemorrhage and at the advanced age which most of these patients have reached would be a severe undertaking.

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# President's Letter

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HERE are two questions of importance to the profession which need answering.

First, is there danger of a scarcity of doctors? Second, are doctors concentrating in the cities to such a degree that the country districts are being deprived of necessary medical service?

Dr. Pusey and others have repeatedly called attention to the fact that the number of medical graduates has decreased in the last 15 years both actually and relatively. This is due to a decrease in the number of medical schools and to limiting the size of the entering classes at a time when the population has been markedly on the increase. This sounds serious; on the other hand—do we need as many?

It is a fairly general opinion among medical men in the Twin Cities that the profession is over-manned; and the doctors in the small towns I have discussed this question with, have all expressed the opinion that there are more doctors in the country than can make a fair living. The general economic situation has, of course, an important bearing on the physicians' incomes as on other incomes.

There is no doubt that the automobile, the telephone and improved roads have greatly increased the range of practice and eliminated great waste of time in transportation. In addition to this, typhoid fever is gone, diphtheria is now treated by giving toxin antitoxin in the first year of life, scarlet fever is going, cholera morbus and

infantile scurvy have gone. Seventy per cent of confinements are in centrally located hospitals.

It may well be that there are too many practising physicians. Accurate information on this question in Minnesota is important, because, if it is true that there is danger of a scarcity, effort should be directed to educating more physicians; on the other hand, if there are too many, medical schools should educate fewer and better.

Our re-registration law in conjunction with compulsory income tax returns gives the profession of Minnesota an excellent opportunity to study this problem. We know where all the doctors are and they are compelled to know their incomes.

Help us get some information about the economic status of the practising profession by answering the questionnaire in the March number of MINNESOTA MEDICINE, page 194.

A modifying factor in the result of such an inquiry, of course, is the increasing number of medical graduates taking full time positions, teaching, public health, contract practice, etc.

This information could be obtained much easier by the alumni association of our medical school. Such an investigation covering a period of 10 years might be of value to those entering the profession.

*C. B. Wright*

# EDITORIAL

## MINNESOTA MEDICINE

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## The Early Diagnosis of Tuberculosis

Although the mortality in pulmonary tuberculosis has shown a decided decrease in recent years, undoubtedly as the result of various anti-tuberculosis activities, the white plague is still a serious problem. The public has been warned of the symptoms of the disease and there is evidence that medical advice is sought earlier than formerly. While education of the public is essential in the fight against tuberculosis the energy expended is futile unless the profession is able to detect pulmonary tuberculosis in its early and curable stages.

The state-wide campaign for the early diag-

nosis was initiated in March by the Minnesota Public Health Association and received the approval of the Minnesota State Medical Association and the Trudeau Society. The attention of the laity was called to the importance of the early recognition of the symptoms of pulmonary tuberculosis and the message "Let your doctor decide" was broadcast by pamphlets, posters, radio, lectures and special articles. What was quite as important, the profession had its attention called to the importance of the early recognition of the presence of the disease—a procedure which it should not be necessary for a lay organization to do. It would do no harm, however, if our attention were called to this point repeatedly.

In our March issue appeared an article by Dr. Gerald Webb of Colorado Springs, Colorado, entitled "The Early Diagnosis of Pulmonary Tuberculosis." In this article were mentioned the symptoms that should lead to a thorough examination for pulmonary tuberculosis. Some readers may have felt that some of the symptoms mentioned did not point particularly to a tuberculous infection. The onset of pulmonary tuberculosis is, however, notoriously insidious. Physical examination of the chest has very marked limitations and often the clinician is surprised at the extent of pulmonary involvement portrayed by the *x*-ray. This being the case, the *x*-ray should be utilized more often than it is. While generally available, it is true that a chest *x*-ray is rather expensive—often more expensive than it should be—and doubtless respect for the patient's pocketbook often accounts for the omission.

When we consider, however, that a marked lung involvement may exist without cough, how often a pulmonary hemorrhage comes out of a clear sky, and that a pulmonary lesion can progress, as is proven by the *x*-ray without aggravation of the symptoms, the importance of *x*-ray diagnosis of pulmonary tuberculosis cannot be overemphasized.

At the same time, a good *x*-ray chest film is invaluable in excluding the presence of pulmonary tuberculosis. It is perhaps unnecessary to

state that the diagnosis of pulmonary tuberculosis should not be made on the *x*-ray examination alone. For to establish a correct diagnosis by *x*-ray examination in nine cases out of ten does not excuse one erroneous diagnosis of the presence of tuberculosis with the accompanying mental distress to say nothing of the economic loss attending proper prolonged treatment. Nevertheless, *x*-ray examination of the lungs is one of the most valuable methods of diagnosis of lung diseases and is much more valuable than physical examination.

The campaign for the early diagnosis of tuberculosis begun in March should be continued indefinitely.

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### The Autopsy

During the past few years, interest in physiological chemistry has tended to replace interest in pathologic anatomy, but it is becoming evident that functional tests are of little value unless checked by pathological findings; therefore interest in pathologic anatomy is being revived. In 1927 the Council of Medical Education and Hospitals of the American Medical Association ruled that every hospital, in order to be approved for internship, must obtain autopsies in at least 10 per cent of deaths occurring in the hospital after January 1, 1928; and after January 1, 1929, that number is to be increased to 15 per cent. Furthermore this body at its recent meeting in Chicago in February, 1928, held, upon the subject of the autopsy, a symposium contributed to by well known medical educators throughout the country.

At the present time autopsies are obtained upon only about .7 per cent of persons dying in the United States and of the 578 accredited hospitals, 367 (65 per cent) obtain autopsies in less than 20 per cent of hospital deaths; only 61 (10 per cent) obtain more than 40 per cent; and only 35 (6 per cent) obtain more than 50 per cent. In this regard Minnesota stands unusually high. Led by the example of the high percentage (88 per cent) obtained by the Mayo Clinic, both private and charity hospitals throughout the state are obtaining from 30 to 70 per cent. In Minneapolis, where the members of the De-

partment of Pathology perform autopsies for any physician, as well as the coroner, post-mortem examinations are held upon 19 per cent of the deaths in that city. Furthermore the records of all autopsies performed by members and associate members of the hospital staffs, including those at the Miller, Ancker, Gillette, and St. Luke's Hospitals in St. Paul, are all pooled in the files of the Department of Pathology at the University of Minnesota and, for 1927, totaled 1,350 available for medical statistics, research, or educational purposes.

An autopsy is of benefit to the family of the deceased, to the physicians in charge of the case, and to the development of medical science. The request for it should be presented as a favor to the family, as part of the courtesy and service offered to the patients in a modern, well equipped hospital. The number of autopsies obtained will be directly proportional to the time and energy expended in trying to obtain them, for a low percentage is largely due to inertia on the part of physicians. It has been found that refusals usually fall under the headings of sentimental objections, the Jewish religion, and activity of undertakers, and all of these may be overcome by education of the general public through cooperation between pathologists, hospital superintendents, clinicians, and undertakers.

The pathologist plays the most important part in making a success of the autopsy, for through better autopsies come more of them. A perfunctory post-mortem examination done by an untrained person will be an autopsy in form only and will be of little value to anyone. It should be performed by a well trained pathologist with a deft technic who can interpret his findings so that they may best explain symptoms and may be a definite contribution to medical knowledge. If autopsies be given their proper place in the medical world, the pathologist will be deserving of more consideration, both financial and otherwise, than he has received in the past and every hospital will be forced by its staff to provide a competent pathologist. Only in this way may a hospital contribute its share toward the training of young physicians, and the development of medical science.

MARGARET WARWICK, M.D.

### Pan-American Congress of Child Hygiene

The interest taken in the child and the advancement made in the study of its care and hygiene has been one of the remarkable developments of the past decade. Probably no greater proof of this can be offered than the fact that a whole congress of nations concerns itself with the joint consideration of this topic.

The Fifth Pan-American Congress of Child Hygiene, which met in Havana this past December, illustrated this point. It was a congress composed of all the South and Central American republics and of Mexico and the United States of North America. It lasted one week and devoted its daily sessions to the discussion of every conceivable phase of child welfare.

The congress was notable in the fact that the United States, for the first time, officially participated, and is now a member. Twenty delegates, representing every field of child welfare, were officially sent from this country. Similar delegations were sent by all the other participating countries. At the general opening and closing sessions of the congress, the President of the Cuban Republic presided.

The numerous sessions, the animated discussions, the many excellent suggestions offered, and remedies propounded attested to the great interest in the subject of child welfare and the recognition of its great importance to the State. To even a casual observer, it was also clear that such congresses are among the most potent instruments to foster common interests, good will and mutual understanding between countries and peoples so divergent and different in race, character, language, and organization as are the Hispano-American and North American republics.

It was interesting to note that the problems of child welfare are common and quite the same in all countries but that the successful treatment of these problems often requires widely differing measures of procedure and organization.

The meeting of the next congress will take place two years from now in Lima, Peru. The success of the congress in Havana bespeaks even greater success for similar meetings in the future and is an assurance that the ideas for which the Pan-American Union stands are not only well founded and mutually desirable, but are also capable of practical execution.

F. W. S.

### Sickness and Accident Insurance

Our attention has been called to a novel form of contract medical practice which has recently been contemplated in Minnesota. In brief, a so-called corporation proposed to furnish a health and accident service, very limited in form, whereby service of physician, surgeon, osteopath, hospital, ambulance, drug store and even a lawyer were to be provided for a small monthly fee to those who signed on the dotted line. In order to avoid certain legal restrictions governing insurance companies in the state, the contract was to be made directly with the physician retained and was to be renewable monthly at the discretion of the corporation. Several jokers in the contract made it practically worthless to the layman. One serious objection to the proposition as a whole was that the patient must avail himself of the service of physicians, hospitals, etc., retained by the corporation. The proposition is just another example of the modern tendency to disturb the right of the individual to select his own medical treatment. If the proposition were to go into effect thousands of individuals in the state would doubtless be drawn into the organization by the apparent benefits to be obtained and would be withdrawn from the field of private practice.

There is entirely too much tendency nowadays for the field of private practice to be cut down by the various corporations, beneficial organizations and insurance companies (particularly those acting under the workman's compensation laws) directing their beneficiaries to specified physicians and surgeons. Some beneficial organizations are expanding to include special rates to the families of members. And some beneficial organizations do not limit their activities to members alone but the physicians retained are in a position to offer rates in private practice to the detriment of local fee rates. It is high time the organized profession took active measures to correct some of the abuses apparent.

Physicians are at times directed by the insurance companies to make their charges in individual insurance cases commensurate with the insured individual's economic status. Many such cases belong, strictly speaking, in the charity group. There is no reason, however, why insured individuals should be charity cases. Nor is the tendency for insurance companies to select a physician on a fee basis rather than for professional ability, a healthy state of affairs.

Would it not be fair for everybody concerned, for the county society or even the state association to adopt a fee schedule? This, we believe, would solve some of the difficulties present in insurance practice. The adoption of such a schedule need not materially affect the present variable fees in private practice.

Sickness and accident insurance is, in our opinion, the solution for the high cost of medical, hospital and nursing service, to say nothing of the economic loss from disability. This insurance should not and need not disturb the rights of the individual to select his own physician and hospital. Insurance never will and should not fully compensate the insured financially for disability sustained. The carrying of this type of insurance, however, would materially help the individual to meet his obligations when sickness or accident comes.

## MISCELLANEOUS

### A PARAGRAPHIC RÉSUMÉ OF AN ARTICLE RECENTLY READ, PERTAINING TO OUR MINNESOTA TUBERCULOSIS SANATORIA\*

The situations discussed seemed to call for a wider reading and comment, particularly on the part of the medical profession throughout the state. Therefore, some of it is presented in this form, and in order to concentrate attention as well as space, it is put in the form of numbered paragraphs, each one, in a measure, leading up to the next.

1. A twenty-five year review of tuberculosis prevention in Minnesota indicates much accomplishment; a drop in the death rate per one hundred thousand, from something over two hundred to something near eighty, is a magnificent accomplishment.

2. While it has been proven that even pulmonary tuberculosis can be cured, our primary method of institutionalizing active cases has long shown that a very high percentage "neither get well nor die"; some have been housed as long as nine years; many enter and leave various institutions, from time to time; the problem of itinerant, non-resident consumptives is a difficult one.

3. These sick patients demand in every sense the same type of modern hospital construction now accepted and understood as the basis of hospitals in general. It is known that some of the early flimsy construction was a mistake; likewise, the placing of insti-

tutions in inaccessible regions, rendering control and management difficult.

4. Unless the sanatoria are to drift into mere "isolation zones," then they must energetically treat their patients, and that calls for the same intensive staff organization, with laboratory and roentgen equipment, as is now standard for our general hospitals. To take any other attitude is to fill up the sanatorium beds and lose the further educational advantages supposed to accrue from limited periods of residence within their walls.

5. To continue to send only partially cured patients out from the institutions, simply to give some others a chance, is as uneconomical as it is medically unwise. Therefore, it would seem that extramural sanatorium agencies must be built up and maintained. There are no extramural agencies that can give the continued and non-centralized aid and help that can come from the general medical profession and from our general hospitals.

6. In the first order, we note the curious trend for the general medical profession to abandon any field which is entered on a large scale by the state. Witness the efforts of most practitioners of medicine to treat or keep patients out of the insane asylum! Witness now the obvious fact that the moment tuberculosis is considered the average doctor loses no time to get the patient off his hands and into a tuberculosis sanatorium.

7. While our tuberculosis sanatoria have been developing into hospitals, the latter have been rapidly developing into health centers. The "doors are swinging out as well as in"; witness the prenatal clinics, those for infant feeding, for metabolic disorders, dental, general surgical and medical clinics, with tuberculosis and venereal diseases all included—not to mention the wholesale eradication of tonsils and adenoids—representing a community effort at disease prevention with which our sanatoria have nothing noteworthy to compare.

8. Dr. Arthur T. Laird, Superintendent of Nopeming Sanatorium, has long sensed the situation, and has been far ahead of his time:

(a) He has developed highly efficient out-patient lines of communication—two in connection with the out-patient departments of the larger Duluth hospitals; regular clinic meetings in all of the larger range towns.

(b) He maintains cordial relations with the physicians at home, and all specialty examinations are freely and readily made.

(c) While some extra space has been available in the two large Duluth hospitals, he has taken over practically one floor of a unit in each hospital for tuberculosis. Patients are being cared for at a per capita daily rate less than the actual cost at Nopeming sanatorium. The greatest ease of surgical and other consultations is provided; but most of all he has access to the fully developed metabolic, roentgen-ray and general laboratories, and the patients needing special surgical and other attention get it with ease and certainty.

(d) He attends general staff and pathological conferences, and brings into the meetings his material. This is discussed and analyzed by all the staff doctors.

\*Subject: "Should Our Tuberculosis Sanatoria Be Hospitals, Isolation Zones or Health Centers?" Read by E. L. Tuohy, M.D., Duluth, Minnesota, before a meeting of the tuberculosis sanatoria executives and their boards and the executives of the Minnesota state institutions, at the call of the Board of Control, meeting at the Gillette Hospital, St. Paul, Minn., Feb. 7, 1928.

9. Thereby, it can be seen that this, at least, is an entering wedge to re-enlist the interest of doctors in the problem of tuberculosis. They lost their interest for the most part because they thought there was not much to do. The surgeon gains back some of it when he knows that he can help with thoracoplasty and other measures; the general practitioner, while observing the course of the patient in the hospital, may take over interest enough to establish the same regime in many homes where it can be safely put into operation.

10. The next step should be to place under surveillance, in their homes, as many ex-sanatorium patients as an analysis of their own condition and home environment justifies. The extramural sanatorium contact with these patients should be maintained either through their own regular doctor or through the employment of whole or part time physicians who might visit them, even as such a doctor now cares for Dr. Laird's sanatorium-controlled patients who are now in our general hospitals.

11. The answer comes that this may work out well enough for the larger centers, but cannot be made to operate nor apply to the smaller institutions in isolated portions of the state. This must be freely admitted. And, in doing so, it is only fair to state that while these outlying small sanatoria can be, and are, excellent health centers, they all too easily fill up with patients, as noted above, and unless they have well developed out-patient departments and lines of contact through the rural districts, there is sufficient rotation of patients to justify the community expense involved in isolating a few. In the next order, some arrangement should be made for an exchange of such of their patients as need intensive group study and possible surgery, with those institutions that have the affiliations above outlined.

12. It behooves us to get back of our economy Governor and begin to give some attention to the matter of ultimate cost. The constant demand for more bed space in our sanatoria, with the ever mounting increase in maintenance budgets, calls for a diligent examination into the facts concerned, to determine how much of this is being devoted to the relief of individual suffering, anxiety and responsibility, and how much to a community defense of susceptible individuals.

13. The key-position of the State University is now, and has been, lost sight of. The splendid institution at Glen Lake, so well conducted by Dr. Mariette and his staff, should have been placed somewhere down along the river bank, in juxtaposition to the University. For exactly the same reason, a psychopathic hospital (as asked for in the last three sessions of the legislature) should likewise be available. The men in training who are to be the future physicians (for the most part) in Minnesota, should be trained to know that any person, functionally or organically distressed, from any cause, is a suitable subject for their ministrations. They should be taught and know that every queer child should not go to the school for feeble-minded; that every "odd nut" should not go to an asylum; that everybody with a cough should not land in a sanatorium.

14. Finally, a plea is made, possibly not to spend less in tuberculosis relief, but certainly more in research to devise better means to prevent and cure the disease. Under that elusive banner "research," we must distinctly differentiate two fields: the one can be carried out by those engaged in routine clinical work; it can be collaborated in by public health nurses and those engaged in social relief. The other is distinctly laboratory in character, and cannot be interrupted by a mixture of duties and responsibilities incompatible with intensive and reasonably secluded study. For this latter type, and at the present time, the University at Minneapolis and the Mayo Foundation at Rochester, are best adapted. Measures should be adopted to delay this type of research no longer.

E. L. TUOHY, M.D.

## STATE BOARD REPORTS

*State vs. Vian.*—The defendant, a lady, was operating the Vian Medical Institute at Osakis, Minnesota, at the date of my visit to her town. She is a married woman about 57 years of age and has been at Osakis since last summer. Prior to last summer she manufactured medicine at Williams, Minnesota. She has no medical license nor any medical education. She claims to be "the champion of the world on cancer."

After investigating three cases treated by the defendant she was arrested for violating the Medical Act. She had prescribed her medicine for one Jacob Sieben of Sauk Centre, who she claimed was suffering from cancer, diabetes and several other ailments. Mr. Sieben died in January of this year but his wife had saved the balance of the medicine and also had the receipt for \$15.00 paid to the defendant.

The defendant hired an attorney who waived her preliminary hearing and after several conferences entered a plea of guilty for his client before Judge Gunderson of the district court of Alexandria, Minnesota. The Judge after hearing from the defendant and the county attorney administered a most severe reprimand to the defendant. The Court imposed a fine of \$250.00, or, if that was not paid, then she is to serve eight months in the county jail. The Court commended the work being done and informed the defendant that if she was arrested again she would get the limit of the law. Sentence was imposed Saturday, March 10, 1928.

This defendant has been treating advanced cases of tuberculosis, cancer, kidney trouble and other serious ailments, in her home in Osakis and offered to shoot anyone who molested her.

The attitude of Mr. Ralph S. Thornton, county attorney, and the office of Mr. Emil Lundeen, Sheriff at Alexandria, Minnesota, is to be highly recommended.

*State vs. McGraw.*—The following is a brief summary of the above case. The defendant's name is Robert McGraw (colored) and his address is Villard, Minnesota. He is about 60 years old.

For some time McGraw has been operating in Minnesota, his specialty being the cure of cancer. He formerly offered his services at Hewitt, Minnesota, and

prior to that, it is stated, he lived at New Germany, Minnesota. Because of the fact that he has nearly everyone in his community either intimidated or firm believers in his ability, it was with some difficulty that evidence was obtained.

From May to August last year he treated one Peter Thompson, a farmer living three miles from Villard, for some form of heart trouble. The fee was to be \$75.00 cash in advance but Thompson paid only \$35.00 of the same. Thompson still has his heart trouble and incidentally he still had some of the medicine. A complaint was filed at Glenwood, the county seat of Pope county, charging a violation of the Medical Act, the complaint being filed on March 7, 1928. The defendant was immediately arrested, hired an attorney, demanded a preliminary hearing, which was accorded him on March 8, and he was bound over to the district court for trial. His bond was set at \$500.00, which was furnished by two farmers at Villard.

Three reported treatments of individuals in that community were investigated and there is no denial of their receiving treatment from McGraw, but they are reluctant to testify. McGraw has been treating everything from asthma to cancer. He is a typical southern negro and the "highly respected Doctor" of Villard. From what could be learned he has absolutely no medical education but did have plenty of "front" and he informed the secretary of the Board that he would "show us he was not violating the law."

Court convenes at Glenwood on the second Monday in June, at which time the defendant will have to stand trial unless he changes his plea to guilty.

Splendid coöperation was obtained from Mr. E. R. Selnes, county attorney at Glenwood, and Mr. Henry Ness, Sheriff of Pope county.

## NEW YORK STATE ESTABLISHES A MINIMUM RECORD FOR TUBERCULOSIS DEATHS

Last year, for the first time in the history of New York State, the number of deaths from tuberculosis fell below 10,000. In 1900 there were 15,799 deaths while in 1927 there were but 9,389. During the same period of time the population of the state increased by over four million. The death rate for the former year was 216.9 per 100,000 population while in 1927 it was only 81.9. Translated into terms of human life this means that 15,481 fewer people died from tuberculosis in New York State in 1927 than would have had the 1900 rate prevailed.

Since 1917 the death rate from tuberculosis in New York State has been halved. Although this is a remarkable record, the State Commissioner of Health, Dr. Matthias Nicoll, Jr., says that we should not rest on our laurels. Rather should still greater effort be exerted to secure more sanatorium beds for the treatment of tuberculosis to make full use of every such facility; and to ensure the examination of every sufferer from the disease sufficiently early so that a diagnosis may be made at the time when proper treatment will have its greatest effect and afford the best opportunities for restoration to health.

## OBITUARY

### Dr. George G. Eitel\*

George G. Eitel, who died suddenly Feb. 9, 1928, at the age of 69, had been for over 30 years an outstanding figure in the medical circles of Minneapolis and the Northwest.

Dr. Eitel was born on a farm near Chaska, Carver County, Sept. 28, 1858. After attending the district school and later the Moravian Academy in town, he first began the study of medicine in the office of Dr. J. S. Richardson. After a period spent in earning and saving enough money to pay his school expenses, in 1885 he entered the Minnesota Hospital College. Three years later he received his M.D. degree and was awarded first prize for scholarship.

Some time was spent in the clinics of Berlin, a year in the University of Pennsylvania and two years in practice in Centralia, Washington.

In 1893 he came to Minneapolis and became an assistant to Dr. F. A. Dunsmoor and was appointed to the surgical staff of Asbury Hospital.

In 1900 he again went to Germany for a year of study, and received the degree of doctor of medicine from the University of Berlin in 1901.

Since then Dr. Eitel has practised continuously in Minneapolis, since 1912 in his own hospital, of which his wife was superintendent. In 1925 he built and occupied, with his associates, a fully equipped office building, in close proximity to the hospital.

Dr. Eitel was a Knight Templar, a Scottish Rite Mason, a Noble of the Mystic Shrine, a member of the Elks' Club, the Automobile Club, the American Medical Association and the American College of Surgeons. At one time he served as first vice president of the State Medical Association.

Quiet, kindly, unassuming, shy about speaking in public, Dr. Eitel had not a trace of bombast nor self-adulation. "Dr. Eitel achieved material success, but material success never for an instant chilled the warm and generous and humane impulses of the man," states an editorial in a leading newspaper.

Among his legacies to the people of the Northwest are the beautiful hospital which bears his name and the generous fund left to the University for the education of worthy students.

His influence has been directly felt in every village and city of our state and its neighbors through his ministrations to the sick. Extraordinary numbers have felt the sorrow of his loss, and have said with real emotion, "He gave me help when I needed it."

\*Read for the Necrology Committee before the regular evening meeting of the Hennepin County Medical Society, Minneapolis, March 5, 1928.

### Dr. O. C. Strickler

Dr. O. C. Strickler, former president of the state board of medical examiners and former member of the University of Minnesota board of regents, died at his home in New Ulm, March 12, 1928. He was 65 years old.

Ora C. Strickler was born at Markham, Ontario,

Canada, Jan. 7, 1863, and was the son of Daniel and Elizabeth (Henderson) Strickler. Following his graduation from the high school at Markham he entered the University of Michigan at Ann Arbor and was graduated from the medical department on June 25, 1885. Dr. Strickler came to Minnesota and located in New Ulm, where he opened an office for the practice of medicine and continued actively engaged in that profession until two years ago in June, when he retired.

Dr. Strickler became widely known as a physician and surgeon within a few years after locating in New Ulm. He was one of the old school, who visited his patients by the aid of a horse and buggy and sleigh, braving the elements to do his duty to humanity. His rugged constitution stood him well in hand for the arduous tasks required of an early physician in this section.

He soon became one of the best known physicians and surgeons in southern Minnesota. In 1888 and 1889 he took a postgraduate course in the medical department of the Berlin university and continually kept abreast of the times in his profession. He was a member of the Brown-Redwood Medical, Southern Minnesota Medical, Minnesota State Medical and American Medical Associations as well as the American College of Surgeons, and for many years took an active interest in the affairs of each organization. For a number of years he was surgeon for the Chicago & Northwestern Railway Co. in New Ulm.

In the midst of an active and arduous practice Dr. Strickler found time to devote attention to the public service and for many years was a member of the local school board. He stood high in the medical profession of this state and in 1898 was president of the Minnesota State Board of Medical Examiners, and for six years, from 1900 to 1906, was a member of the board of Regents of the University of Minnesota. Dr. Strickler took an active interest in politics and gave much study and thought to political and economic questions, not only of local application, but of a national and international scope. He was a republican in political tenets for the greater portion of his active life. He was regarded as one of the republican leaders in southern Minnesota for years. He also took an active interest in the material affairs of his city and community and was a director of the State Bank of New Ulm and of the Courtland State Bank for a number of years. He was vice president of the former institution at the time of his demise.

Dr. Strickler is survived by his widow and two daughters, Miss Vera Strickler, who is teaching in Saint Paul, and Miss Leola Strickler, teaching at Marshall.

#### Dr. John Grosvenor Cross

Dr. John Grosvenor Cross, 57 years old and for nearly a quarter of a century prominently identified with the Minneapolis medical profession, died March 19, 1928, in Abbott hospital after a brief illness. Dr. Cross was born in Rochester, Minn., May 8, 1870, the son of Dr. and Mrs. E. C. Cross, pioneer

residents of Minnesota, who came to the state from New England in 1858. His mother, before her marriage, was Fanny E. Marcy.

After receiving his early education in the public schools of Rochester, Dr. Cross attended the University of Minnesota, from which he was graduated in 1892 and later attended the Northwestern University and Northwestern medical school in Chicago.

Following his graduation from these schools Dr. Cross returned to Rochester, where he engaged in medical practice for about seven years, after which he went abroad and spent approximately two years studying in Vienna.

In 1904 Dr. Cross came to Minneapolis and from that time until his death was engaged in medical practice there. During his many years of service he was prominently identified with the activities of the Hennepin County Medical Society, of which he was president at one time and member of the board of trustee. He also was a delegate to the American Medical Association, president of the Academy of Medicine, a member of the faculty of the college of medicine of the University of Minnesota and a former chief of the medical division of General Hospital.

During his years of medical practice Dr. Cross also was a member of the staff of Abbott, Hill Crest, St. Mary's and Northwestern hospitals.

He also was a member of the Minneapolis Club, the Nu Sigma Nu and Chi Psi fraternities and actively identified with the St. Mark's church. He also was a former president of the Six O'clock Club.

Dr. Cross was married in 1893 to Frances Montgomery, Minneapolis. He is survived by his wife, two sons, Grosvenor M. and Roderic M. Cross, and a daughter, Miss Louise Cross, and two sisters, Miss Anna D. Cross and Mrs. F. C. Van Dusen, all of Minneapolis.

#### Dr. P. C. Davison

Dr. P. C. Davison, 54, of Willmar, pioneer resident of Minnesota, died March 3, 1928, at Fort Myers, Fla.

Dr. Davison had been suffering for two years, and died from complications following an operation.

He was born and reared at Reeds Landing on Lake Pepin. He married Miss Ina Morrell of Waseca county. He was a graduate of the College of Physicians and Surgeons of Hamline university, St. Paul, in 1901. He practised at Clara City for 12 years following his graduation, and later at Austin and Detroit Lakes. In 1916 he located at Willmar.

#### Dr. George H. Overholt

Dr. George H. Overholt, 86, who administered first aid to members of the Jesse James-Younger gang when they were captured following the famous Northfield bank robbery, died February 25 at his home in Kenyon, Minnesota.

Dr. Overholt was also a member of the posse which fought with the gang. He was the first physician to practice in Kenyon.

## REPORTS AND ANNOUNCEMENTS OF SOCIETIES

### FIRST COUNCILOR DISTRICT MEETING

A meeting of the profession belonging to the First Councilor District of the State Association of which Dr. Melvin Henderson is Councilor, was held March 13 at the Kahler Hotel, Rochester, Minnesota.

The meeting was addressed by Dr. C. B. Wright of Minneapolis, president of the State Association; Dr. H. M. Johnson of Dawson, chairman of the state legislative committee; Dr. E. A. Meyerdling, the state secretary; and Dr. W. F. Braasch of Rochester, past president of the association.

A scientific program was presented at 3 p. m. by Drs. Lemon, Buie, Braasch, Henderson and O'Leary, members of the Mayo Clinic. Dinner in the evening was attended by some sixty members.

### UPPER MISSISSIPPI MEDICAL SOCIETY

Dr. Mary Ghostly of International Falls was elected president of the Upper Mississippi Medical Society at the meeting held in Brainerd in February.

Other officers are Dr. A. T. Agnew, International Falls, first vice-president; Dr. Paul Kenyon, Wadena, second vice-president; Dr. C. E. Anderson, Brainerd, third vice-president; and Dr. G. I. Badeaux, Brainerd, secretary-treasurer.

Dr. Einar Johnson of Bemidji and Dr. M. P. Gerber of Brainerd were named delegates to the state convention in Minneapolis in June with Dr. E. H. Marcum of Bemidji and Dr. H. A. Carlson of Brainerd, as alternates.

### MINNEAPOLIS SURGICAL SOCIETY

The March meeting of the Minneapolis Surgical Society was a dinner meeting held at the Nicollet Hotel, March 1. Dr. Dallas B. Phemister of Chicago gave an illustrated address on "Bone Sarcoma." Dr. Phemister is chairman of the Committee on Bone Sarcoma Registry of the American College of Surgeons.

### GOODHUE COUNTY MEDICAL SOCIETY

At the annual meeting held March 14, 1928, the following officers of the Goodhue County Medical Society were elected:

President, Dr. L. A. Steffens, Red Wing; vice-president, Dr. H. P. Sawyer, Goodhue; secretary-treasurer, Dr. S. H. Anderson, Red Wing; censor for three years, Dr. A. W. Jones, Red Wing; censor for two years, Dr. A. E. Johnson, Red Wing; censor for one year, Dr. A. A. Conley, Cannon Falls.

Dr. M. W. Smith of Red Wing was elected delegate to the State Association, with Dr. L. E. Claydon, Red Wing, as alternate.

## OF GENERAL INTEREST

Dr. J. J. Kolars of Montgomery, Minnesota, is now located at Le Sueur Center for the practice of his profession.

Announcement of the 1928 executive committee for the Minnesota Public Health association has been made by Dr. J. A. Myers, Minneapolis, president.

Dr. Clifford E. Henry of Minneapolis attended the meeting of the American College of Physicians in New Orleans, which was held during the week of March 5.

The new Presbyterian Hospital, the first unit of the new \$40,000,000 medical center in New York City, was opened last month. The building houses, besides the Presbyterian Hospital, the Sloane Hospital for Women and the Squier Urological Clinic.

The Twin City Association of Clinical Technicians has announced the maintenance of a registry of qualified laboratory technicians. From this registry technicians can be obtained by calling either Miss Elizabeth Gernhart, General Hospital Laboratory, Minneapolis, or Miss Frances Hyslop, St. Luke's Hospital Laboratory, Saint Paul.

At the February meeting of the Minnesota Pathological Society held at the Institute of Anatomy, University of Minnesota, George O. Burr gave an address on "Vitamins from the chemical standpoint." Dr. C. M. Jackson addressed the meeting on the subject of "Vitamin deficiencies" and a case report on "Linitis plastica" was given by Dr. T. G. Fitzgibbon.

Dr. Charles E. Proshek of Minneapolis has been appointed by the Czecho-Slovakian government as honorary consul for Czecho-Slovakia for Minnesota, North Dakota and Montana. Dr. Proshek will be the first man to represent the Czecho-Slovakian republic in the Northwest. Dr. Proshek was born in New Prague, Minnesota, where he formerly practiced his profession and is a graduate of the University of Minnesota.

Members are Dr. H. Longstreet Taylor, St. Paul, president of the National Tuberculosis Association; William A. Laidlow, St. Paul, secretary of the Northern Pacific Railway Beneficial Association; Dr. O. E. Locken, Crookston, president of the Norman-Polk County Sanatorium Commission; Dr. A. T. Laird, Duluth, superintendent and medical director of Nopeming Sanatorium; Alfred E. Koenig, Americanization secretary for the Minneapolis Y. M. C. A.; and Mrs. J. A. Thabes, Brainerd.

### DR. H. LONGSTREET TAYLOR HONORED

Medical and health organizations of Minnesota united in paying tribute to Dr. H. Longstreet Taylor, pioneer tuberculosis worker of the Northwest and president of the National Tuberculosis Association, at a banquet held at the New Nicollet Hotel, Minneapolis, Wednesday, March 28, at 6:30 p. m. The event was the annual banquet of the Lymanhurst medical staff, which sponsored the affair. Active coöperation was given by the Minnesota Public Health Association, Hennepin County Tuberculosis Association, Trudeau State Med-

cal Society, and the Ramsey County Public Health Association.

Dr. W. A. Evans, Chicago, editor of "How to Keep Well" column for a newspaper syndicate and professor of Public Health at Northwestern University Medical School, and Dr. Louis B. Wilson, director of the Mayo Clinic laboratory and Mayo Foundation professor for the University of Minnesota, were the principal speakers. Dr. F. E. Harrington, commissioner of health, Minneapolis, acted as toastmaster.

Dr. Taylor's effort in the interest of the tuberculosis fight in Minnesota dates back to 1890. His first article to show the need for an institution for the care of tuberculous patients was published in 1893. In 1899 he made an attempt to care for a few tuberculosis patients in tents on the Ramsey County poor farm, introducing open air treatment into Minnesota.

Largely through Dr. Taylor's efforts, a bill for the establishment of a state sanatorium was introduced into the Legislature in 1901. Two years later the Legislature appropriated \$25,000 for sanatorium and created a permanent Advisory Commission, of which Dr. Taylor was a charter member and on which he served until 1918. The first permanent sanatorium in Minnesota was opened by Dr. Taylor at Pokegama in 1905. He was leader in an unceasing campaign to pass legislation making possible county sanatoria, and this bill was finally passed in 1913.

Dr. Taylor has been Minnesota's outstanding figure in the anti-tuberculosis campaign constantly since the early days of pioneering. He was one of the organizers of the official tuberculosis organization of the state—now known as the Minnesota Public Health Association—in 1906 and has been closely identified with its activities ever since, serving as president in 1924, 1925 and 1926. Last year he received the highest honor that can be paid a tuberculosis worker in this country—presidency of the National Tuberculosis Association. This pioneer leader has been truly called the "father of the tuberculosis movement in Minnesota." He has tried to see a state without facilities for the care of even one consumptive develop into one known throughout the country for its excellent chain of sanatoria; to see the tuberculosis death rate cut almost in half, and a public indifferent and ignorant concerning tuberculosis become interested and informed on the subject. Dr. Taylor's indomitable spirit, which failed to beunted by apathy and opposition in those early days, his untiring energy, and generous expenditure of time and money, may go a great share of credit for what has been accomplished.

Some 424 reservations have already been made for the homecoming banquet of medical alumni of the University of Minnesota to be held June 13 at the time of the A. M. A. meeting in Minneapolis. A golf tournament is being planned for the afternoon of the same day. Medical alumni are urged to send in their reservations for the banquet if they have not already done so. These should be sent to Dr. N. O. Pearce, chairman, Homecoming Headquarters, 119 Administration Building, University of Minnesota, Minneapolis.

## NEW AND NON-OFFICIAL REMEDIES

The Council in Pharmacy and Chemistry has accepted the following articles:

HERMES-GROVES DAIRY Co.:

Bacillus Acidophilus Milk-Hermes.

LEDERLE ANTITOXIN LABORATORIES:

Anterior Pituitary Desiccated-Lederle.

Posterior Pituitary Desiccated-Lederle.

Whole Pituitary Desiccated-Lederle.

ELI LILLY & Co.:

Iletin (Insulin-Lilly) U-100, 10 c.c.

Liver Extract No. 343.

H. K. MULFORD Co.:

Sterile Solution of Dextrose (d-Glucose) 50 c.c.

Double End Vial.

SHARP & DOHME:

Hexylresorcinol Solution S. T. 37.

### TRUTH ABOUT MEDICINES

*Bacillus Acidophilus Milk-Hermes.*—A whole milk cultured with *B. acidophilus*. It contains not less than 200 million of viable organisms (*B. acidophilus*) per c.c. at the time of sale. For a discussion of the actions, uses and dosage of bacillus acidophilus preparations, see New and Non-official Remedies, 1927, p. 216, "Lactic Acid-Producing Organisms and Preparations." Hermes-Groves Dairy Co., Pittsburgh. (Jour. A. M. A., January 14, 1928, p. 117.)

*Phanodorn.*—Cyclobarbitol.—Phanodorn differs from barbitol (diethyl-barbituric acid) in that one of the ethyl groups of barbitol is replaced by a cyclohexenyl group. The actions and uses of phanodorn resemble those of barbitol, but it is more than twice as active as barbitol and the therapeutic dose is correspondingly smaller. It is eliminated more rapidly than barbitol; hence the action is not so lasting. This is an advantage when it is used merely to put one to sleep where sleep will then continue without its further action. It is used mainly for its sedative action. Winthrop Chemical Co., Inc., New York. (Jour. A. M. A., January 14, 1928, p. 117.)

*Sterile Solution of Dextrose (d-Glucose) 50 c.c. Double End Vial.*—Each vial contains Dextrose, U.S.P., 25 Gm.; cresol, 0.1 per cent; distilled water, to make 50 c.c.; buffered with dibasic sodium phosphate anhydrous and potassium biphosphate anhydrous. H. K. Mulford Co., Philadelphia.

*Hexylresorcinol Solution S. T. 37.*—A solution of hexylresorcinol-S. & D. (New and Non-official Remedies, 1927, p. 320), 1 part, in a liquid composed of glycerin 30 per cent and water 70 per cent, 1,000 parts. Sharp & Dohme, Baltimore.

*Iletin (Insulin-Lilly) U-100, 10 c.c.*—Each cubic centimeter contains 100 units of insulin-Lilly (New and Non-official Remedies, 1927, p. 198). Eli Lilly & Co., Indianapolis. (Jour. A. M. A., January 28, 1928, p. 293.)

*Ephedrine*.—*Ephedrina*.—Ephedrine base.—An alkaloid derived from *Ephedra equisetina*. The actions and uses of ephedrine are the same as those of the ephedrine salts. The free alkaloid is employed in mediums, such as oils, in which it is more soluble than the salts. Ephedrine occurs as an unctuous, almost colorless solid. It is soluble in alcohol, chloroform, ether and water.

*Ephedrine-Lilly*.—A brand of ephedrine-N. N. R. It is supplied in the form of Inhalant Ephedrine Compound-Lilly, containing ephedrine-Lilly 1 per cent (by weight) in a liquid composed of menthol, 0.66 Gm.; camphor, 0.66 Gm.; oil of thyme, 0.31 c.c.; liquid petrolatum to make 100 c.c. Eli Lilly & Co., Indianapolis.

*Pollen Extracts-Cutter* (New and Non-official Remedies, 1927, p. 34; Jour. A. M. A., June 11, 1927, p. 1891).—Also marketed in single vial packages containing 5 c.c. of a 1:100 solution. Cutter Laboratory, Berkeley, Calif.

*Pollen Extracts Concentrated-Cutter*.—Liquid obtained by extracting the dried pollen of plants with a liquid consisting of 67 per cent of glycerin and 33 per cent of a buffered saline solution. For a discussion of the actions, uses and dosage, see Allergic Protein Preparations, New and Non-official Remedies, 1927, p. 23.

*Mesuroi (Benzobis)*.—A basic bismuth salt of methoxyhydroxybenzoic acid containing from 54 to 57 per cent of bismuth. Mesuroi is proposed as a means of obtaining the systemic effects of bismuth in the treatment of syphilis (see New and Non-official Remedies, 1927, p. 99, Bismuth Compounds). The drug is supplied in the form of emulsion mesuroi, 20 per cent for intramuscular administration. Winthrop Chemical Co., Inc., New York. (Jour. A. M. A., October 22, 1927, p. 1427.)

*Liver Extract No. 343*.—A water-soluble, nitrogenous, non-protein fraction obtained from fresh mammalian liver, manufactured under direction of the Committee on Pernicious Anemia of the Harvard Medical School. It is supplied in vials containing an amount of powdered extract (3 to 4 Gm.) representing 100 Gm. of fresh liver. Liver Extract No. 343 is used in the treatment of pernicious anemia. Only preliminary observations have been made concerning its value in conditions other than pernicious anemia; apparently it is of value in some other types of anemia, but definitely seems to be of little or no value in many cases of ordinary secondary anemia. Liver Extract No. 343 is administered orally. Eli Lilly & Co., Indianapolis. (Jour. A. M. A., February 4, 1928, p. 385.)

*Compound Syrup of Calceose*.—A syrup containing in 100 c.c. calceose solution (New and Non-official Remedies, 1927, p. 123) 33.3 c.c.; alcohol, 5 c.c.; extractives from wild cherry, 4 Gm. (20 grains per fluidounce); chloroform, 0.6 c.c. (3 minims per fluidounce); peppermint and other aromatic drugs. Maltbie Chemical Co., Newark, N. J.

*Anterior Pituitary Desiccated-Lederle*.—The anterior lobe of the pituitary gland of cattle, dried and powdered, without the addition of preservative or dil-

uent. For a discussion of the actions, uses and dosage see Pituitary Gland, New and Non-official Remedies, 1927, p. 285. The product is marketed in the form of tablets containing 2 and 5 grains respectively. Lederle Antitoxin Laboratories, New York. (Jour. A. M. A., February 11, 1928, p. 463.)

*Posterior Pituitary Desiccated-Lederle*.—The posterior lobe of the pituitary gland of cattle, extracted with acetone, dried and powdered. For a discussion of the actions, uses and dosage see Pituitary Gland, New and Non-official Remedies, 1927, p. 285. The product is marketed in the form of tablets containing 1/10 grain. Lederle Antitoxin Laboratories, New York.

*Whole Pituitary Desiccated-Lederle*.—The pituitary gland of cattle, including the infundibulum and the anterior and posterior lobes, dried and powdered, without the addition of preservative or diluent. For a discussion of the actions, uses and dosage see Pituitary Gland, New and Non-official Remedies, 1927, p. 285. The product is marketed in the form of tablets containing 1 and 3 grains respectively. Lederle Antitoxin Laboratories, New York. (Jour. A. M. A., February 18, 1928, p. 545.)

## PANCREOLS

In the advertising of the Drug Products Co., Inc., Pancreols (formerly called Insulols) are claimed to be rectal suppositories "Containing Specially Prepared Desiccated Pancreatic Hormone-bearing Substance Containing the Active Principle of the Islands of Langerhans." In effect this preparation offers insulin for rectal administration. Scientific evidence has not been offered for the value of this product. The rectal administration of insulin has been found of little or no value, as compared to the subcutaneous route, against glycemia, glycosuria or acidosis. The rectal administration of insulin belongs to the class of methods which are "either mechanically difficult, inconclusive, inconstant, or wasteful of the drug." No preparation of the Drug Products Co., Inc., has been accepted by the Council on Pharmacy and Chemistry for inclusion in New and Non-official Remedies. A number of this firm's products have been reported on unfavorably, namely; Pulvoids Calcylates, Pulvoids Calcylates Compound, and Pulvoids Natrium Compound. (Jour. A. M. A., July 16, 1927, p. 229.)

## BATHROOM HEATER AS A "PATENT MEDICINE"

Electric heaters, dignified by the name of infra-red generators and adorned with enamel and nickel, are being sold to the public at high prices as potent therapeutic agencies. The book of uses which always accompanies a bathroom heater when it is sold as a therapeutic agent, usually appears to be the work of one whose chief qualification was that he had access to a medical dictionary. True, these lamps generate infra-red rays, but so does a steam radiator or any other hot body. (Jour. A. M. A., February 4, 1928, p. 388.)

# PROCEEDINGS OF THE MINNESOTA ACADEMY OF MEDICINE

Meeting of December 14, 1927

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Wednesday evening, December 14, 1927. Dinner was served at 7 p. m. and the meeting was called to order at 8 p. m. by the President, Dr. John E. Hynes. There were 32 members and 1 visitor present.

A Committee consisting of Dr. George Senkler, Chairman, Dr. John Armstrong, and Dr. C. N. McCloud, was appointed to draw up suitable resolutions on the death of Dr. Anton Shimonek, a fellow member.

The scientific program of the evening consisted of case reports and papers as follows:

1. DR. E. L. TUOHY (Duluth) reported a heart case and showed specimen. This showed calcareous aortic valve cusps, aortic stenosis and insufficiency, with extreme cardiac hypertrophy.

This is a 1,120 gram heart, but if it showed nothing more than its size I would not present it. But a man, 44 years of age, in apparently good health, fourteen months ago consulted me. He gave no history of rheumatism or syphilis, but he had a diastolic murmur, an aortic insufficiency, and a very loud systolic murmur heard over the aortic area; he complained of hoarseness, and had raised blood on two or three occasions—not large amounts, however. His diastolic pressure was reduced a little, and the systolic pressure moderately elevated. There was no history, as I have said, of rheumatic fever.

Because of the aortic insufficiency I naturally thought of syphilis, but four or five blood Wassermanns taken were negative. He was given anti-syphilitic treatment on suspicion, in any case, from which he received no benefit.

X-ray studies made at that time were fluoroscopic, as there are no plates on file. However, plates taken two weeks before death show a large heart, both to right and left. When first seen, the fluoroscopic examination was somewhat indicative of syphilis, in that the ascending aortic arch bulged slightly to the right.

He was studied ten months later at Rochester, where it was stated they studied him carefully—made spinal punctures, etc.—with no evidence of syphilis. He then had some spitting of blood and extreme dyspnea, as his condition grew worse.

This heart falls into a typical group described by Monckeberg, and brought to our attention first by Drs. Bell and Clawson\* of the University of Minnesota. The weight of this heart (1,120 grams) is obviously made up from the huge and massive muscle. It is the type of concentric enlargement that spells enormous overwork. Interestingly and characteristically, there is a perfectly soft, pliable aorta, but absolutely calcified aortic cusps.

Those of you who are interested should read the splendid contribution of Drs. Bell and Clawson, and look up their references. At one of our special Heart

Society meetings, Dr. Clawson asked the clinicians present to be on the lookout for this disorder, in order to assist in interpreting the sequences that lead up to the extraordinary incapacitating heart lesions.

The mechanical factors leading up to the globular concentric hypertrophy have long been fully understood, once aortic stenosis of high grade is established. Allbutt, years ago, emphasized the protective influence this lesion gives the aortic wall, saving it from the force of vigorous unloading of an overfilled and enlarged left ventricle, so often seen in pure aortic insufficiency and hypertensive states. But why the localization of so much chalk in the valve cusps? This is still a mooted point, and Clawson seems to lean toward a primary infectious or rheumatic damage to the valves, followed later by the disastrous deposits. It is to be noted that as usual, for the entity, this man developed it at least a decade before the usual extensive atherosclerotic deposits are expected, and he didn't have them in the usual sites elsewhere. Hence, we are led to suspect some local damage precipitating the degenerative avascular trends, and the result thereafter is all mechanical. Certainly syphilis plays no part.

A year ago Dr. Henry Ulrich, of Minneapolis, in giving a report of his work, stated that clinicians were rather too loath to diagnose aortic stenosis. So much error has crept into the over-diagnosis of systolic murmurs at the base of the heart that there is good cause for hesitation in assuming the presence of true stenosis. Nevertheless, we have other clinical signs abundantly confirmatory of this lesion, not to mention the classical fluoroscopic and roentgen silhouette and, as demonstrated in this instance, we should be more courageous in making the diagnosis. With particular attention to the curious calcareous valve cusps here found, we should realize that, in addition to customary rheumatic disease or syphilis, we have a third etiologic agent to conjure with in aortic valve disease.

2. DR. A. SCHWYZER (St. Paul) reported two cases as follows:

(a) The case is that of a woman with a tumor in the pelvis and another in the right pubic area. One doctor thought it was malignancy in the pelvis with metastasis in the inguinal gland. However, we found that the tumor in the pelvis was probably a fibroid of the uterus. It was the size of a grapefruit. The tumor which was in front of the right inguinal and pubic region seemed to me to be adherent to the right inguinal ring. It was about the size of a man's fist.

We made an exploratory incision and found a fibroid, much larger than shown in the diagram here. The uterus was unicorn. There was no tube or ovary on the right side. On the left side there was a large hydrosalpinx and a normal ovary. On the right side one could see in the depths of the pelvis a large band running up retroperitoneally from the uterus to the inguinal region. The pubic tumor was very tense, cystic. It was a hydrocele. The solid part in it was the right ovary with two walnut-sized cysts. In the solid tissue between the two cysts we found (microscopically) ovarian structure. The pedicle was quite

\*Bell, E. T., and Clawson, B. J., "Comparison of Acute Rheumatic and Subacute Bacterial Endocarditis." *Arch. Int. Med.*, 37:66-81, April, 1926.

vascular and fleshy. The thick and fleshy round ligament went off into this ovarian pedicle. Here we had a descent of the ovary rather exactly as in the male the testis descends.

(b) Another case of interest is that of a man 55 years of age. He had had stomach trouble more or less all his life. His real misery dated from October 1, 1926, when he had been at a banquet and had had too much to eat and drink. He vomited, and since then he had been feeling bad. Dr. Schons made x-ray plates, and a tumor in the duodenum was prettily demonstrated. The x-ray plates showed a filling defect near the pylorus (plates shown) and this showed up in all the plates. Dr. Schons made a Cole-Graham test of the gallbladder, and we learned this organ did not function. Dr. Lepak then referred the case to me. It seemed that the patient had as much trouble from the gallbladder as from the tumor; at least the symptoms impressed me in this way.

On opening the abdomen we found that the duodenum was thickened and it felt as though it contained a coiled-up tapeworm. We then remembered the x-ray plates, and forced the mass up and found it entered partly through the pylorus. The duodenum being far over on the side, it was much easier to approach the mass from the stomach, which we did. A gastrotomy of a length of about 5 cm. was made. Part of the tumor had been pushed into the stomach. The pylorus was now held open by small retractors. We found the attachment of the tumor just beyond the pylorus, running from the lower aspect of the pyloric ring down for about 1½ cm. The pedicle was clamped and the whole tumor (6-7 cm. long and as thick as one's thumb) was taken out. We then took the gallbladder out and closed the abdomen tight. The gallbladder wall contained streptococci.

The patient is free from untoward symptoms after a very smooth recovery. We took the gallbladder out partly on account of the fact that the history pointed that way and because the gallbladder was found to be adherent from tip to bottom. On the upper aspect of the liver there was a large white area. The cystic duct felt firm—like a cord. We could not make out any enlarged glands.

DR. H. W. JONES (Minneapolis) gave a further report on the case of a man who was injured by a derrick falling on him, causing a rupture of the diaphragm. (First reported at the meeting of Sept. 15, 1926.)

This man (patient presented) is a case I reported on two or three times before, who was crushed by a derrick. His shoulders were pushed down to his hips. When he was brought in, from his neck up he was just as black as could be—purple—and was bleeding from both ears, with hemorrhage into the conjunctivæ, and just about dead. We simply tried to sustain him and build him up, and after he got some better we started to x-ray him. The x-ray report was that he had hydrothorax. We put needles in but could not get any fluid, so finally began studying him over to see what we could find and, on giving him a barium meal, found this condition.

X-ray plate 1. This plate shows the stomach above the diaphragm and in the right chest. We could see the meal pass from the esophagus, which was in normal position, up into the right chest.

X-ray plate 2. This, taken later, shows the stomach and small bowel in the right chest.

X-ray plate 3. A barium enema was given and here is the large bowel above the diaphragm, almost to the second rib. The liver is under the diaphragm. The large bowel passes almost directly from the sigmoid flexure to the second rib on the left side and from there almost directly to the normal position of the appendix.

We opened the abdomen to see what the conditions were. We found the entire diaphragm on the left side was gone. The space between the abdomen and right chest was apparently entirely open. There was a little rim of diaphragm on the front and back. The heart was pushed over to the other side. When we got in there we were not bothered much by the heart because it was not in the left chest. As we tried to operate on him he stopped breathing for a while. When we found such an extensive damage to the diaphragm we realized that we could not close the hole without liberating the ribs. We resected five ribs near the spine and then allowed the wound to heal, and then operated by means of a long incision parallel to the seventh rib, detaching the sternal attachment of the ribs at the sternal end of the incision. This allowed us to press the ribs with the anterior attachment of the diaphragm towards the back, which allowed an easy closure of the diaphragm.

The incision was a very long one, and the heart was pushed well over to the right side. However, we had to start sewing the diaphragm at the bottom of the heart, and it was necessary to hold the apex of the heart out of the way to insert the first stitches. The difficult thing about the operation was a combination of trying to give him an anesthetic and working against the action of respiration and the heart all at the same time. During nearly all of the operations he would turn black from interference with respiration, and we would have to stop the anesthetic and wait until his respiration and circulation revived. Even with the ribs detached and this long incision it was difficult to hold the chest open. There were four of us working and the one who tried to hold the chest open became completely exhausted.

We could not replace the viscera in the abdomen without making an extra abdominal opening, and the final operation was for his hernia.

Plates taken following the large operation showed a development of hydrothorax, and this picture shows the tubes for drainage. The stomach is shown here below the diaphragm, and this later picture shows the liver, with stomach and bowels well below the diaphragm, and the heart has assumed practically a normal position. This (pointing) is the lung expanding.

#### DISCUSSION

DR. A. SCHWYZER: Where was the rupture in the diaphragm?

DR. JONES: It was right across laterally. It seemed

to start in the middle, running from the center at the spine to the left mid-axillary line. About one inch was attached to the posterior and one inch to the anterior. As we sewed it, it enlarged so as to cover the space entirely. There seemed to be nothing of the diaphragm except what was lying on the front and back. The hole was about as large as a head. It was clear that there was to be difficulty in holding the rib margins apart, but it was not so difficult to sew the diaphragm with the ribs freed.

DR. ULRICH: How much function is in the diaphragm now?

DR. JONES: I do not know. We opened the abdomen again about six weeks ago to repair the hernia in the abdominal wall. The stomach was up against the diaphragm. The patient has a lot of thickened pleura on the left side but the lung is expanding.

DR. H. E. MICHELSON (Minneapolis) read his thesis on "Leprosy." Photographic slides were shown.

DR. E. T. BELL (Minneapolis) read a paper entitled "The Etiology of Hypertension."

Discussions by Drs. Tuohy and Gilfillan.

The meeting adjourned.

#### Meeting of Jan. 11, 1928

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Wednesday evening, January 11, 1928, at 8 o'clock. Dinner was served at 7 o'clock.

The meeting was called to order by the President, Dr. John E. Hynes. There were 30 members present.

The minutes of the November and December meetings were read and approved.

Dr. J. M. Armstrong read resolutions on the death of Dr. Anton Shimonek, who died on November 23, 1927:

Dr. Anton Shimonek was born in Manitowoc, Wisconsin, September 4, 1855. He attended Rush Medical College, from which school he was graduated in 1879. After two years of practice at Beaver Dam, Wis., he went abroad, studying at Prague and Vienna.

In 1884 he returned to his home and shortly after came to St. Paul where he became associated with the late Dr. Gottlieb Stumm. He taught Pathology at the St. Paul Medical College and for a number of years was Clinical Professor of Surgery in the Hamline Medical College.

He was a member of the Minnesota Academy of Medicine, the County and State societies, the American Medical Association, and the American College of Surgeons.

Dr. Shimonek had a large following and did an extensive surgical practice, and was greatly loved and respected by his patients. He was rather retiring in nature and never sought to make himself conspicuous in any way. He was a good teacher and had the power to convey accurate knowledge to his students without waste of words. He had the general respect of the medical profession and when he expressed an opinion it was given careful consideration by his confreres. His death was sudden, on

November 23, 1927. He is survived by his wife, a son and a daughter.

BE IT RESOLVED, That it remains for us to offer to those who loved him best our sincere sympathy, and that a copy of these resolutions be sent to his bereaved family, and spread upon the minutes of this Academy.

GEORGE SENKLER, M.D., Chairman.

JOHN ARMSTRONG, M.D.

C. N. McCloud, M.D.

A motion was carried that a copy of these resolutions be spread upon the minutes of the Academy and a copy sent to Dr. Shimonek's family.

The program of the evening consisted of two theses, as follows:

DR. C. B. WRIGHT (Minneapolis) read his thesis, entitled "Achyilia and the Effects of Histamine." This was illustrated with numerous lantern slides.

DR. C. E. CONNOR (St. Paul) read his thesis, entitled "Otitic Thrombophlebitis." (To appear in the May number of MINNESOTA MEDICINE.) This was illustrated with lantern slides.

#### DISCUSSION

DR. COLVIN (St. Paul): As a peculiar coincidence, I received today the marriage notice from the Pacific Coast of a young man whom I operated upon in 1906 for sinus phlebitis, and yesterday I was asked to see a young man in the tuberculosis wards at the Ancker Hospital upon whom I operated the same year for sinus phlebitis accompanied by pyemia. Each of these cases shows the necessity for individualizing the treatment, and demonstrates some interesting pathology.

In the first case, a child of 5 years of age, there was suppuration of both mastoids with operation on both bones. After the first operation there was marked improvement; after the second operation the temperature remained irregularly high; exposure of normal sigmoid sinus on this side, which, however, had to be obliterated for bleeding. A later operation was done on the side of the mastoid first operated upon, and this was the side in which the real trouble was and was manifested by a red streak down the neck. When the vein was exposed, the sense of touch was not sufficient at first to decide whether thrombosis was present or not. The deciding observation was the presence of fine filmy adhesions between the vein and its sheath. On opening the vein a long clot was removed, which extended the whole length of the vein and was branched at the lower end as if it extended in both directions in the subclavian. The jugular vein was removed; the sinus was not opened, but the patient made an uninterrupted recovery.

The other case was brought to the hospital unconscious, with a diagnosis of pyemia. He had a suppurating knee joint and an abscess of his chest wall. These, it was proven, originated from an old infected middle ear, causing mastoid suppuration with lateral sinus and jugular vein involvement. The conditions found, it seems to me, explain a number of the questions involved in the thesis and the discussion. The jugular vein and the lateral sinus were filled with pus,

the vein being closed by adherent endophlebitis. After opening the vein, the sinus was opened and through-and-through drainage demonstrated. The patient made a slow but final convalescence.

About the same time I saw a man who, having an acute middle ear suppuration, died with symptoms of general septic infection. He was not operated upon, because of the absence of any localizing evidence of mastoid or sinus infection. At autopsy no evidence of mastoid or sinus involvement was found.

During this period of my mastoid activity, I also operated on a woman seven months pregnant, for sinus infection, who developed empyema. She recovered from all of these things and was delivered of a healthy baby at term.

All of these cases impress me with the necessity, in these septic cases, of never giving up but to continue the fight and open up every new depot of infection as it occurs.

The reference to phlebitis of the extremities with their varying terminations is instructive, but the problem in sigmoid or lateral sinus or jugular phlebitis is rather different. The infection is near the center of things both as to brain and heart, and while, as my second case proves, adhesive localizing phlebitis may occur, it is certainly not the rule and the consensus of opinion among the aurists is, I think, that an aggressive radical attitude is the correct one. It is, however, interesting to note that, frequently enough after these operations, a septic character of temperature may exist for several weeks before recovery ensues.

DR. BURCH (St. Paul): I have enjoyed Dr. Connor's thesis very much. He has brought out an interesting problem. One of the things that impressed me was the importance of the anatomical relationship and it recalled to my mind one of my earlier experiences.

A man had multiple metastases when brought to the city hospital. It was discovered that he had an otitis media. On opening the mastoid, I found that he had almost no mastoid and the sigmoid sinus was almost in apposition to his antrum and was thrombosed. Similar anatomical conditions may be the reason for some cases of sinus phlebitis occurring early, and others late.

DR. CONNOR (in closing): I think the question of whether or not the jugular should be attacked and, if so, what should be done to it, is one of the things that offers a good deal of interest to the general surgeon and otologist. We do know that these cases get well sometimes without any surgery at all; nature does take care of the process.

Dr. Zimmermann spoke of simple incision of the vein. That too has been practiced by different men. I think that might be all right if one could always be sure of getting all the infection and be sure that the ends of the thrombi were sterile. The question is, what is a thrombophlebitis going to do? That is one of the arguments advanced by the people who advocate excision. It seems to me when one does have a definite phlebitis with changes in the vein wall, excision is giving that patient more of a chance. Dr. Schwyzer spoke of the aspiration of air, and that is one very great danger. I obliterate the jugular by ligature and thus block off the infection higher up.

About the question of attacking the sinus in the temporal bone: In one case I did not do it. I intended to but she got all right so I did not. I went back and opened the neck. I think one should open the sinus in the temporal bone.

The meeting adjourned.

CARL B. DRAKE, M.D.  
Secretary.

#### ASEPTONES NOT ACCEPTABLE FOR N. N. R.

The Council on Pharmacy and Chemistry reports that under the non-informing but therapeutically suggestive name "Aseptones," the Scent-Ets Company, Brooklyn, markets a mixture stated to have the following composition: menthol, 0.40; salicylic acid, 2.00; sodium chloride, 60.00; zinc sulphate, *dried*, 65.00; alum, *dried*, 65.00; boric acid, granular, to make 500.00; tincture of cudbear, 2 c.c. The preparation is referred to as "the astringent and antiseptic Douche Powder." The Council found "Aseptones" unacceptable for New and Non-official Remedies because it is an unscientific mixture, marketed under a non-informing, therapeutically suggestive name, and without declaration of its quantitative composition. (Jour. A. M. A., January 14, 1928, p. 117.)

#### THE COMPOSITION OF PROCAINE BORATE (BOROCAINE)

At the request of the Council on Pharmacy and Chemistry the A. M. A. Chemical Laboratory made an investigation of "Borocaine," marketed by Sharp & Dohme, particularly with a view to determining whether it presented sufficient novelty to permit recognition of the proprietary name. The study was made by George W. Collins, Sc.D., who concludes that the product marketed as "Borocaine" is procaine borate; that it is a definite chemical compound which is readily hydrolyzed when dissolved in water, and acts as an aqueous solution of boric acid to which has been added procaine (base). He concludes that it is not a hitherto undiscovered compound. (Jour. A. M. A., January 7, 1928, p. 25.)

## PROGRESS

Abstracts to be submitted to Section Supervisors.

Members are urged to abstract valuable articles which they run across in their reading and send the abstracts to the physicians in charge of the respective sections. In order to avoid duplication it would be well to communicate with one of the section supervisors before the article is abstracted.

### MEDICINE

#### SUPERVISORS:

F. J. HIRSCHBOECK,

205 W. 2nd STREET, DULUTH

THOMAS A. PEPPARD,

LA SALLE BLDG., MINNEAPOLIS

THE CAUSE OF RENAL BACK-PRESSURE IN OBSTRUCTIVE LESIONS OF THE URETHRA AND BLADDER NECK: Henry A. R. Kreutzmann (Jour. of Urology, 1928, Vol. XIX, No. 2, pp. 199). Obstruction in the adult male urethra occurs as the result of hypertrophied prostate, median bar formation or urethral stricture. It is well known if any of these conditions are present for a long time certain changes take place in the bladder, ureters and kidneys. The end-result of chronic obstruction, hydrourter and hydronephrosis have been convincingly proved by numerous autopsy examinations. The mechanism of the formation of the dilatation, however, is still a mooted question.

Many theories have been advanced as the likely cause of renal back pressure in obstruction to the urethra and bladder neck.

Petit believed that the intravesical pressure, acting on the oblique intramural portion of the ureter, pressed the walls of the bladder together. In this way the urine was prevented from entering the bladder and dilatation occurred.

Sir Charles Bell in describing the muscles that bear his name stated that in diseased conditions of the bladder the attachments of these small muscles about the ureteric orifices prevented the urine from flowing freely into the bladder, with consequent back pressure.

Graves and Davidoff, working on the question of bladder regurgitation, state that the tonic contraction of the bladder wall against the distending fluid, particularly in the presence of urethral neck obstruction, is able to open up the ureteric orifices sufficiently to permit regurgitation to occur.

Bush believes that kidney dysfunction accompanying prostatic hypertrophy is a condition due primarily to neural reflexes coming from the area of the trigone.

Tandler and Zuckerkindl noted that in cases of hypertrophied prostates, the vas deferens is pulled upon in such a way as to compress the ureter at the point where the two cross each other.

These authors later stated as a result of postmortem

examinations that in cases of hypertrophied prostate there is a change in the form, the length and the direction of the intramural portion of the ureter. The result of this twisting, they believe, may cause a partial stenosis of the ureter with resultant back pressure.

Young believes that when the intravesical pressure approaches for a considerable part of the time the normal intra-ureteral pressure, the outflow of urine from the ureter is no longer free. As a result, the ureter is eventually overpowered and dilates like the bladder.

The author states that at the present time most urologists believe regurgitation to be the cause of upper urinary tract dilatation. As evidence against this view he cites the reports of Kretscher, Eisendrath and Bumpus in which cystography done on cases of chronic prostatic obstruction showed a very low incidence of ureteral reflux. Bumpus in a study of 527 cystograms of patients with enlarged prostates found reflux present in only 25 cases of the entire series.

For three years the author had cystogrammed and pyelogrammed every patient showing urethral stricture or prostatic hypertrophy and concluded that in both these conditions the pathologic changes which occur in the bladder wall, the ureters and kidneys are the same and, we believe, the method of formation is identical. The author has been able in the absence of any reflux to demonstrate with pyeloureterograms marked dilatation of the ureters and kidney pelvis.

He believes the most common cause of kidney damage in cases of enlarged prostate and urethral stricture to be a narrowing of the intramural portion of the ureter due to marked hypertrophy of the bladder walls. In support of this belief he remarks on the great difficulty noted in passing catheters through the intramural portion of the ureter and in no other place. Postmortem examinations on several of the cases with previous urological studies showed distinct narrowing of the dilated ureter at the point where it passed through the bladder. In a number of instances the author injected the ureters of fresh specimens with celloidin and bismuth. After injection and fixation, x-rays were taken and the distinct narrowing of the ureter was noted.

As a result of the narrowing of the intramural portion of the ureter, dilatation with stasis and subsequent infection occurs. Samson has shown that under these circumstances the ureter may become somewhat similar to a rigid tube. In such a ureter all means of permitting reflux is removed. Whether reflux is unilateral or bilateral depends on the length of time the infection has been present.

In conclusion he states:

In hypertrophied prostates, hydrourter and hydronephrosis may occasionally occur as a result of the kinking of the ureters by the vas deferens.

The most common cause of upper urinary tract dilatation in obstructive lesions of the bladder neck and urethra in adults is a constriction of the intramural portion of the ureter. This constriction is due to the hypertrophy of the bladder musculature surrounding the ureters.

Reflux is not common in these conditions. When

present, it is caused by an infection in the ureter resulting in a stiffening of its intramural portion.

Reflux is a terminal and not a primary phenomenon of prostatic hypertrophy and urethral stricture.

JOHN R. HAND, M.D.

**THE ACTION OF COUGH UPON MATERIAL IN THE TRACHEOBRONCHIAL TRACT:** Lincoln A. Brown and Edward Archibald (*Amer. Rev. of Tuber.*, 1927, XVI, 3). Material may be spread more deeply into the pulmonary tree by two factors: (1) the inspiratory rush of air and (2) the expiratory effort. A single cough does not necessarily clear the bronchial tree and the subsequent inspiratory effort may spread the material to the finer bronchioles or alveoli, where it no longer is in a sensitive area and does not provoke cough. It therefore remains longer and may set up a pathological process.

Ameunille injected a tuberculous pulmonary cavity in the lower lobe with lipiodol, noting that the oil dropped to the bottom of the cavity. Three successive coughs spread it into the middle lobe, then to the lower lobe on the other side. It was then coughed up.

Lipiodol was injected into bronchiectatic cavities in another case. Cough emptied the cavities and disseminated the lipiodol widely throughout the pulmonary field.

In case a proximal bronchus is blocked by mucus or spasm the expiratory effort may carry material first up toward the block and then back further than it was before.

Three sets of experiments were carried out. In one lipiodol alone was used. In another equal parts of lipiodol and thick sputum, and in a third very thick tenacious sputum into which the oil was injected. The results with the first two were the same. The materials were injected into animals intratracheally and x-rays taken at about 2 minute intervals. First x-rays were taken with the animals under light anesthesia to see how far the material would spread without cough and then cough was induced or occurred spontaneously, at times with simultaneous tracheal compression.

It was shown that infiltration of the bronchial tree was more complete after cough than without cough and still more complete if compression over the trachea were used. The oil also remained in the animals longer where they were made to cough.

With the thick tenacious sputum the material was never forced into the smaller bronchioles in any case and was soon coughed up.

It would seem that cough is very dangerous during such surgical procedures as collapsing the lung by thoracoplasty, etc. General anesthesia, morphine before and after, and postural drainage with head down were suggested to guard against untoward results.

J. K. SHUMATE, M.D.

**THE DISAPPEARANCE OF PATHOLOGICAL SHADOWS IN X-RAY PLATES OF THE LUNGS:** Courcoux and Gilson (*Revue de la tuberculose*, 1927, VIII, 385). Reference is made to the observation of M. Jacquerod, reported in his book on the natural process of healing in pulmonary tuberculosis.

There is no doubt that definite shadows disappear. The difficulty is to determine which lesions except cavities correspond to the radiographic appearances. Some think that spots or shadows do not disappear except such as correspond to congestive or exudative phenomena of non-organized lesions. For this difficulty the authors have no solution. All they say they can do is to read the radiographic images at different stages in the evolution of tuberculosis and at different stages of the diminution or disappearance of stethoscopic signs.

In certain cases the resolution is complete and the shadows entirely disappear. Such cases are exceptional. More often instead of large opaque shadows almost uniform in density, one finds conglomerations of spots of various densities. From serial films inferences are drawn as to the progressive or retrogressive tendency of the process. Certain dense shadows almost completely disappear and leave merely a faint haziness over one side of the chest. More often appearances are seen corresponding to the curable tuberculous pneumonia of Bezancon & Braur.

In other cases along with these hazy appearances one sees linear shadows, faintly dense, the radiographic expression of a cicatricial process, probably a sclerosis.

Even cavities in the lung parenchyma may disappear quickly and leave no more trace than an appearance resembling an emphysematous vesicle. The infiltrated walls of the cavity may even be absorbed. In other cases a fibrous area remains, sometimes in the form of a scar. Four cases are reported. In the first case the patient had unilateral lesions.

Artificial pneumothorax was attempted but was not successful. The patient gave up treatment and went to work. Five months later he returned and the x-ray showed extraordinary diminishing of the pathological shadows on the affected side. In fact they had almost entirely disappeared. The second case showed extensive mottling over the right side and several areas which were interpreted as areas of cavitation. Six months treatment showed almost complete disappearance of these radiographic signs of disease. The third case with extensive bilateral lesions presented, after a year and a half of treatment, greatly diminished, more disseminated and organized lesions.

The fourth case showed x-ray evidence of a cavity in the right axillary region. This was replaced after four months of treatment by a small stellate shadow.

The authors believe that certain forms of pulmonary tuberculosis tend to spontaneous cure but that at present we have no means of telling from the radiograph in which case this healing will occur.

A. T. LAIRD, M.D.

## SURGERY

### SUPERVISORS:

DONALD K. BACON,  
LOWRY BLDG., ST. PAUL

VERNE C. HUNT,  
MAYO CLINIC, ROCHESTER

THE RESULTS OF SPLENECTOMY FOR PURPURA HEMORRHAGICA: Allan W. Spence, M.D. (The British Jour. of Surg., XV, 1928, No. 59, 466-499). Two case reports and a review of 101 cases of splenectomy for hemorrhagic purpura are given. The end-results in one of the cases was excellent and in the other unsuccessful. In the 101 cases, 69 obtained a good result and in 6 cases there was considerable improvement.

There were 21 deaths, and in 5 hemorrhage continued with but little improvement. Sixteen of the 75 cases were not followed for any considerable period of time, so that little value can be attached to these.

Purpura hemorrhagica may be classified either as acute or chronic, the latter being much more common. There were 80 chronic cases, 12 acute, and in 9 the duration of the disease is not stated.

Death is more common following splenectomy in the acute cases, there being 10 deaths in 12 cases of the acute types and in the chronic only 8 deaths, one being accidental and 3 others attributable to causes other than purpura hemorrhagica.

The author suggests three possible pathological mechanisms existing in cases of hemorrhagic purpura, which account for different end-results from splenectomy.

In the first type the entire reticulo-endothelial system is involved equally. Diseased megakaryocytes form defective platelets which are destroyed excessively by a diseased spleen, and the remainder of the reticulo-endothelial system. The platelet count rises temporarily after splenectomy, but gradually falls and hemorrhages recur.

In the second type the spleen is chiefly involved. As a result an increased number of platelets is destroyed by the spleen. In order to keep up numbers, the megakaryocytes are overworked, and defective platelets are produced—secondary myelopathy due to exhaustion. After splenectomy the bone marrow recovers and an increased number of normal platelets is produced. This type does well after removal of the spleen.

In the third type the extrasplenic reticulo-endothelial system is chiefly involved. Platelets are destroyed by activities of the reticulo-endothelial system outside the spleen. Splenectomy is useless here. There is no way in which the type of purpura can be determined clinically, but in chronic purpura the results have been so satisfactory that splenectomy is indicated, when a diagnosis has been made.

In most cases, when splenectomy is successful there is a decrease in the bleeding time to normal, and an

increase in the platelet count to normal or above normal. When the platelets go above normal they gradually drop. In a few cases there is no rise in the platelet count or diminution of the bleeding time.

Following splenectomy there is an increase in erythrocytes and a leukocytosis with a normal differential count. The leukocyte count gradually falls to normal.

D. P. GREENLEE, M.D.

## PEDIATRICS

### SUPERVISORS:

CHESTER A. STEWART,  
LA SALLE BLDG., MINNEAPOLIS

ROY N. ANDREWS,  
MANKATO CLINIC, MANKATO

THE URINARY LEUKOCYTE COUNT IN CHILDREN IN NORMAL AND IN PATHOLOGIC CONDITIONS. Leo S. Friedman, M.D., and A. Graeme Mitchell, M.D. (Amer. Jour. of Diseases of Children, February, 1928). The urine of apparently healthy infants and children contained an average of 10 pus cells per cubic millimeter. Ninety per cent of the urine showed 20 cells or less. The upper limit of normality for all ages was 40, counts of from 20 to 40 being present more often in girls of the older age groups. Between the ages of 2 and 13, the urinary leukocyte counts averaged 13 per cubic millimeter for girls and 7 for boys; under 2 years of age, the counts were approximately equal in both sexes.

The urine of infants and children suffering from various respiratory, intestinal or other infections frequently showed a varying degree of pyuria in excess of the normal. The leukocyte counts tended to be higher in the older age group than in the younger, higher in girls than in boys and higher in the acute than in the subacute or afebrile stage.

In cases of pyelitis and nephritis, the counts were definitely higher than in any other conditions studied.

Leukocyte counts in the urine which show more than 20 but less than 40 cells per cubic millimeter are suggestive of urinary infection but may readily occur in concentrated urine and in acute afebrile diseases. Leukocyte counts of over 40 per cubic millimeter point strongly to infection somewhere along the urinary tract if vaginitis has been excluded.

When large amounts of pus appear in the urine, the diagnosis is obvious, but in early or doubtful cases the estimation of the number of cells is often of great value.

R. N. ANDREWS, M.D.

INTRADERMAL VACCINATION. John A. Toomey, M.D., and Robert B. Hauver, M.D. (Amer. Jour. of Diseases of Children, February, 1928). Many physicians have reported high percentages of success-

ful vaccinations by the intradermal method. Vaccine is made from the contents of a stock capillary vaccine tube diluted with 3 drops of saline. One cubic centimeter of this 1 to 4 dilution from bulk or capillary vaccine was injected. A tuberculin syringe with a 27 gauge needle was used for the injections.

A typical positive reaction was a maculated lesion which developed from three to six days after vaccination; it pustulated in from five to twelve days, a scab formed in from eight to eighteen days, and the wound healed in from fourteen to twenty-nine days.

The advantages of this method might be enumerated thus:

1. There is less pain.
2. A definite predetermined amount of vaccine can be injected. The large sloughing of the secondarily infected ulcer is unusual.
3. This method can be used in certain skin diseases.
4. Playing children do not need to have a bandage to keep the dirt and infection out.
5. The intradermal method produces vaccinations in persons who previously have been unsuccessfully vaccinated.
6. The skin may be cleaned by any chemical before vaccination without killing the virus.

Intradermal vaccination, in the authors' experience, is the most efficient method of vaccination.

R. N. ANDREWS, M.D.

**TREATMENT OF CHRONIC ENDOCARITIS WITH DECOMPENSATION:** Complete rest in a semi-reclining position must be enforced. A bland diet in small amounts and at frequent intervals should be given, fluids to be limited if there is edema. The enlarged liver and the congested portal circulation may be drained by an occasional dose of calomel, followed by sodium phosphate or milk of magnesia. The sovereign remedy in cardiovascular decompensation is digitalis—large doses to begin with; later smaller doses will do to keep up a proper circulation. An ice bag to the precordium and codein are effective in slowing the pulse, quieting the heart and quieting the patient. When the acute symptoms have subsided, digitalis in small doses should be continued and general tonic treatment given. Slow, gradual and limited exercise may be permitted.

R. N. ANDREWS, M.D.

#### JOY BEANS QUACK JAILED

Some time ago a fraud-order was issued against a quack, one Frank Beland of Cairo, Ill. Beland exploited a piece of aphrodisiac quackery under such trade names as "Joy Beans Laboratories" and "Beland Laboratories," selling a preparation that he called "Joy Beans." According to the government report "Joy Beans" were put up by Eli Lilly and Co. After trial, Beland received a jail sentence of ninety days. (Jour. A. M. A., February 11, 1928, p. 481.)

## ROENTGENOLOGY

### SUPERVISORS:

LEO G. RIGLER,

MPLS. GEN'L HOSPITAL, MINNEAPOLIS

A. U. DESJARDINS,

MAYO CLINIC, ROCHESTER

**A CASE OF VERTEBRA PLANA (Calve):** H. J. Panter (Acta Radiologica, Vol. VIII, 1927). Panter gives in detail a case of Vertebra Plana and discusses the etiology, clinical, and roentgen findings.

This condition was first described by Calve in about 1925 and classified under the same category as Perthes' and Köhler's disease.

Clinically the patient presents the following findings: (1) increasing weakness of back, making it difficult for him to walk; (2) pain in chest and back corresponding to the segment involved; (3) knuckle or gibbus formation.

Roentgen examination reveals one vertebral body (in this case the ninth dorsal) very much compressed, the entire body forming only a very narrow disc with its anterior and posterior thickness about the same. The density of the body is also relatively increased. The intervertebral discs between the pathological vertebra and the ones above and below are slightly widened posteriorly due partially to the gibbus formation. This last factor and also the absence of paravertebral abscess are important in ruling out tuberculous spondylitis. The appearance of the narrowed body is not that seen in compression fractures.

The condition is chronic (the history in this case was of nine years duration) and is apparently a disease found in the first age period (1 to 20 yrs.)

MALCOLM B. HANSON, M.D.

**LATER EXPERIENCES CONCERNING THE NICHE DIAGNOSIS IN CASES OF DUODENAL ULCER:** Ake Akerlund (Acta Radiologica, Vol. VIII, 1927). Several cases are given in which the writer was able to demonstrate a niche in a duodenal cap which otherwise manifested no deformity. He uses the technic of applying compression to the duodenal bulb so that only a small amount of barium mixture remains and outlines the mucous membrane. Then serial plates are taken.

Many types of compressors are used. Some are made of cork and others of aluminum and cotton. The angles and amount of compression are first controlled by fluoroscopic examination.

Akerlund further states that in his experiences the duodenal ulcers that now come for roentgen study are smaller and more superficial than in the past. Thus, in some cases they do not show the characteristic deformity of the bulb, and must be diagnosed by the demonstration of a niche through the use of compression.

MALCOLM B. HANSON, M.D.

## BOOK REVIEWS

Books listed here become the property of the Ramsey and Hennepin County Medical libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

## BOOKS RECEIVED FOR REVIEW

**MUSCLE FUNCTION.** Wilhelmine G. Wright. Foreword by J. Playfair McMurrich, Prof. of Anatomy, University of Toronto. 188 pages. Illus. Cloth, \$3.50. New York: Paul B. Hoeber, Inc., 1928.

**ALUMINUM COMPOUNDS IN FOOD.** Ernest Ellsworth Smith, Ph.D., M.D. 378 pgs. Cloth, \$7.00. New York: Paul B. Hoeber, Inc., 1928.

**ASTHMA: ITS DIAGNOSIS AND TREATMENT.** William S. Thomas, M.D., Associate Attending Physician in Immunology, St. Luke's Hospital, New York. 279 pages. Illus. Cloth, \$7.50. New York: Paul B. Hoeber, Inc., 1928.

**THE MECHANICS OF THE DIGESTIVE TRACT.** Walter C. Alvarez, M.D., Associate Professor of Medicine, University of Minnesota. 2nd edition. 447 pages. Illus. Cloth, \$7.50. New York: Paul B. Hoeber, Inc., 1928.

**PHARMACOTHERAPEUTICS, MATERIA MEDICA AND DRUG ACTION.** Solomon Solis-Cohen, M.D., and Thomas Stotesbury Githens, M.D. 2009 pages. New York: D. Appleton & Company, 1928.

**THE HUMAN BODY.** Logan Clendening, M.D. 389 pages. Illustrated. \$5.00. New York and London: Alfred Knopf.

Like many another memory of our childhood, the old family doctor book has disappeared and in its place comes volumes such as this. Beautifully bound, well set up, adequately illustrated by accurate charts of the human body, and with an appended glossary of medical terms, this book tells clearly and in detail all that anyone might wish to know about his body or the vital processes. Comprehensive throughout, it presents an unbelievable amount of accurate knowledge and woven in with the story of the physiology and anatomy of various parts is a discussion of the various pathologic processes and the diagnostic tests that are used to detect them. With each subject is also incorporated a brief history of the accumulation of the present day knowledge and this adds greatly to the value and interest of the book.

All information is accurate and scientific for the most part, but several rather unorthodox ideas are presented. He does not believe in periodic health examination of symptomless people because "the number of people whose lives are lengthened is so small as to be entirely minimized in the face of the meaningless sorrow entailed." He feels that anyone having definite symptoms should consult a physician, but fears that he who comes from a sense of duty may misinterpret some minor findings, have his interest focused upon himself or have his activities limited and become a neurotic. He also lists the "fashionable" fads in medicine as too

much uric acid in 1885, chronic appendicitis in 1890, Kneip water cure in 1895, floating kidney in 1900, tilted uteri in 1905, colonic stasis in 1910, extraction of teeth in 1915, non-surgical biliary drainage in 1920, and inferiority complex in 1925.

Furthermore, he approves of a child getting his sex education outside of the home because "they teach this particular subject particularly well in the gutter, with conviction and an inescapable clarity of detail and with just sufficient of that gorgeous air of secrecy to invest it with the dubiousness of speculation." And in spite of the great detail of the rest of the book, the subject of venereal disease is given in just three pages and of these gonorrhea has just one. He says "syphilis is after all not such a dreadful disease . . . how many people have it and are not even aware of it, much less any the worse for it, would be hard to say." The average physician will find it difficult to subscribe to these last statements, but in spite of them the book is excellent and the medical profession will do well to lend its influence to its circulation for its readers will have an idea of the place of medical science in the sun and will place no faith in the cults.

MARGARET WARWICK, M.D.

**THE NEW MEDICAL FOLLIES.** Morris Fishbein, M.D. 205 pages. \$2.00. New York: Boni and Liveright, 1927.

From the ever versatile pen of Dr. Morris Fishbein, editor of the *Journal of the American Medical Association* and *Hygeia*, also popular lecturer and writer on medical subjects, comes another collection of papers representing another "Medical Follies." It follows the same general plan as does its popular predecessor, but includes several entirely new subjects. It begins with a somewhat tedious classification of the cults in "The Encyclopedia" and then in "The Cult of Beauty" he discusses the lure of the fancifully named beauty shops and toilet preparations and tells of the attempts of several states to regulate, by law, the practise of beauty culture. The popular appeal, as well as the grave dangers, of plastic surgery is very forcefully portrayed. In "The Craze for Reduction," he says, "Of all the fads that have afflicted mankind, none seems more difficult of scientific exposition than the craze for slenderization." He gives the reasons for the need of a reasonable amount of subcutaneous fat on a woman's body and speculates upon the question of whether the recent changes of form and dress in women is the result of their emancipation or vice versa. After criticizing the women for their reducing mania he censures the men for their pathetic hope for rejuvenation and shows the futility of either various operations or drugs or devices sold by promoters, in accomplishing the return of youth and adds that it may be just as well not to have constantly rejuvenated grandfathers and great-grandfathers competing with the young men trying to obtain a foothold in the business world.

"The End of Eclecticism" gives the rise and fall of fads of therapy, especially Homœopathy. The importance of physical therapy is emphasized and also the

dangers of its present promotion in the hands of advertisers of apparatus when it should be controlled by the medical profession through medical education. Psychoanalysis receives its share of discussion and the lack of its acceptance by the medical profession is laid to its too great emphasis of sex and the lack of uniformity in both methods and interpretations by different psychoanalysts. "Ethics—Medical and Otherwise" presents a thoughtful and comprehensive discussion which should be read by every physician. The author points out that the present code of ethics is presented not as a threat but as an inspiration, and that it gives consideration first to the patient and next to the physician, and that "The greatest prize that a physician can secure is the esteem of his fellow craftsmen, not the easily procurable flattery of the credulous public."

The last chapter is very fittingly dedicated to "The Physician of the Future," and the author points to the bewildering increase of medical knowledge during the past few years, the discrimination against the middle class who are too poor for the best and too rich for charity, the dangers of too great specialization which may yet cause the failure of the science of medicine and the pitfalls lying in wait for state controlled medicine. He thinks that group practise will never flourish because "business is business and medicine is medicine and never the twain shall meet" and that medical economics will be of little value because business methods are so entirely different from the principles of medicine. He concludes that the physician of the future will be very similar to the physician of today. "The outlook for a prompt establishment of a medical Utopia seems pessimistic—and it is."

As was said of its predecessor, this book should be read by everyone connected, either directly or indirectly, with the medical profession and these readers should see that it comes to the attention of as many lay readers as possible for it will give them a clearer concept of the principles of medicine, as well as the dangers of the popular medical fads and of the cults.

MARGARET WARWICK, M.D.

**MINOR SURGERY.** A. E. Hertzler, M.D., F.A.C.S. Chief Surgeon, Halstead Hospital, and Victor E. Chesky, M.D., F.A.C.S., Halstead, Kansas. New, with 438 Illustrations, 550 pages. C. V. Mosby Company, St. Louis. \$10.00.

Since 90 per cent of minor surgery is done by men who are not surgeons, this book should prove a valuable reference for both student and practitioner. While it is not a complete text on minor surgery the authors have tried to include those things that are practical and that have been proved.

Beginning with a discussion of affections of the scalp and cranium it takes up in an orderly way the various parts of the body, discussing those things the student can see and examine. Injuries, inflammations, new growths, tumors and deformities are briefly discussed. In addition there is a chapter on sutures and dressings, bandaging, and blood transfusion.

The illustrations are good, and the book is well written and interesting.

V. N. PETERSON, M.D.

**MANAGEMENT OF THE SICK INFANT.** Langley Porter, B.C., M.D., M.N.C.S. (Eng.), L.R.C.P. (Lond.), and William E. Carter, M.D. 3rd edition, revised. 726 pages. Illus. Cloth, \$8.50. St. Louis: C. V. Mosby Company, 1927.

This well written and well arranged text is in the third edition. The subjects are taken up from the standpoint of the predominant symptom and are dealt with in an able manner. As a reference book for the general practitioner and also for the pediatrician it is valuable. The chapter on methods is up-to-date and of great practical value.

L. R. CRITCHFIELD, M.D.

**NURSERY GUIDE.** Louis W. Sauer, Ph.D., M.D. 206 pages. Illus. 2nd revised edition. Cloth \$2.00. St. Louis: C. V. Mosby Company.

It is a question whether there is need for books on the care of the infant when so many good ones have been produced, and when so many journals on hygiene are published. Information when wanted can be much more readily found in a book, however, than in journal files. There are still many homes with infants where no reliable book on the care of the baby is found, so the publication and purchase of such books as this should be encouraged.

Dr. Sauer has quite thoroughly covered the problems which ordinarily confront the caretaker. The largest part of the book is devoted, as it should be, to the care of the healthy infant. A few pages are given to the care of sick babies, with the fact stressed that any illness should have the care of a physician, and only enough detail is given to aid in following medical instruction.

Good information is given on the subject of teething, and some popular errors are contradicted.

An excellent chapter is given on the habits of the infant.

In the chapter on the nursing infant, the necessity of completely emptying the breasts to procure a good supply of milk is emphasized and the advice is given to use manual expression or the breast pump if the breasts are not emptied by the baby. The technic of manual expression is very clearly given, but the author neglects to state that either method should be used only after consulting the physician. To determine the amount of milk a baby gets at a feeding, it is necessary to weigh before and after nursing and not depend upon the time at the breast.

In connection with artificial feeding some good instruction is given on the milk supply, the care of milk, proprietary foods, rules for feeding, recipes, weaning, and diet lists both for the normal infant and the underweight child.

One wonders if a few of the statements may not suggest some unwise procedures; for example, if shoulder braces might not be purchased without proper advice,

and lysol used for wet dressings when safer solutions should be used.

Dr. Sauer gives a very limited list of publications regarding the care of infants and children, when many more could be recommended, and still not exhaust the valuable literature on the subject.

The publishers have put out an attractive book, printed on good paper, well indexed, with marginal headings and clear illustrations.

JENNETTE M. McLAREN, M.D.

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MODERN MARRIAGE. Paul Popenhoe. 235 pages. \$2.00. New York: The MacMillan Company, 1927.

In these present times of severe criticism of marriage, such a book as this comes like a refreshing breath of clear air. The author feels that "The principle of monogamy has stood the test and is gaining ground all the time, because it meets the needs of normal men and women better than anything else that has been suggested," and that "The success of marriage depends in the first place upon oneself; in the second place on the woman one marries and on the mutual understanding of and adjustment to the new situations that are constantly arising." He thinks that many marriages are failures because of lack of knowledge in our young people in choosing their mates and in fostering and conserving the mutual love which is the essential element, and he writes this book to supply that knowledge. Unlike the majority of writers on this subject, he steers a safe course between sentimentality and vulgarity and gives a sane, frank, comprehensive and interesting discussion of marriage.

He feels that every man should marry for the sake of his own comfort, for the advantages of parenthood and the fulfilment of personality. And since he considers the selection of a wife "the most important choice a man ever has to make," he discusses at length "Whom" from the standpoint of health, compatibility, race and age. Next comes "How," where he says that in order to attract a desirable girl, a man should consider himself from the point of view of health, decency and success, and outlines the campaign that may prove successful in obtaining the girl of his choice. Then follows a long consideration of the importance of love in marriage, with advice for keeping it throughout the years to insure happiness.

The importance of the physical side of marriage is recognized and emphasized and it is treated delicately and yet frankly. Another chapter is devoted to "Children." He considers their production the goal of all life and that they contribute much to the development of their parents. The causes of sterility are discussed here also, as well as the fallacy of prenatal impressions. There is an appendix containing two chapters. One of these contains an alphabetical list of well known diseases with their influence on marriage and heredity while the other is a young woman's account of her first confinement.

This book will, of course, hold little interest for the physician, but it should be well known by physicians so that they may recommend it to young people, both those who are and those who are not contemplating marriage in the near future, so that they may all acquire a sane and comprehensive knowledge of marriage as an institution. Furthermore, the book should be placed in all libraries and reading rooms frequented by young adults who are seeking knowledge of any kind. Although written primarily for men (because the author feels that he knows them better), it will prove to be of equal interest to women.

MARGARET WARWICK, M.D.

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MENTAL HANDICAPS OF GOLF. Theo. B. Hyslop. 111 pages. \$1.50. Baltimore: The Williams Company, 1928.

In this little volume an English physician who is a lover of golf views the game through a medical eye and discusses the mental reactions necessary for a true appreciation and good form in the game. He recommends it to physicians because "to the physician, disease becomes non-existent while he is on the golf links and the ills of the human body are relegated to the subliminal . . . they may play it either as a counter-irritant to the exigencies of their profession or as an insurance against premature senility."

Then follow sage remarks on the game such as, "The British golfer plays the game in a spirit of adventure which is the spirit of his race; the American plays it in the spirit of gain (desire to excel) which is the spirit of his race . . . the man or woman who can perform the feat of golf composedly in spite of its joys and sorrows is one to whom the sporting instinct bows or curtsies . . . perhaps in no other game is the spirit of tolerance more called for than it is in golf and the graces of friendly intercourse, together with patience, courtesy, mutual help and guidance, do much to improve one's own mental stance . . . cultivation of the habit of being a good loser is a vital necessity in golf . . . grouching is, in golfing communities, a notifiable disease which calls for quarantine . . . perhaps of all features of the nature of a golfer, that of his bearing toward his caddy is the most indicative . . . it is not a game of chance but of consciously guided effort . . . golf should be and is the sole aim and object of a human existence whilst on the links . . . to some golf is a game whilst to others it is a disease . . . the want of ability is bad, but the want of desire to learn is worse . . . tranquillity with equanimity should be the ideal mental stance . . . in golf as in life generally, some individuals are hampered, not only by mental stiffness but by organized mental adhesions which they are constantly endeavoring to overcome."

The physician who is a golf addict will find much of interest, amusement and of education in the book and every golfing doctor should read it.

MARGARET WARWICK, M.D.

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## THE PRESENT STATUS OF INGUINAL HERNIA AND ITS REPAIR\*

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*Minneapolis*

THE draft boards of the United States revealed that 2.08 per cent of two and one-half million men between the ages of 21 and 31 examined for the army were unfit for military duty because of hernia. Estimating from these figures as a basis Andrews<sup>1</sup> believes we are safe to conclude that there are from 4 to 6 million people in this country who have hernia. Men with hernia are considered unfit for military service and at the present time large industrial corporations who examine their employees are rendering it more and more difficult for those who have hernia to obtain employment. With the advent of industrial compensation, hernia has reached a point of considerable importance legally and economically. In fact it must be of importance to both employer and insurance carrier if the statement of experts that the disability of hernia is 25 per cent is assumed to be correct.

The present status of the compensability of hernia is still unsettled, as is likewise medical opinion. Henderson<sup>2</sup> states that the sudden appearance of a hernia always means a pre-formed sac, and Russel<sup>3a</sup> maintains that an acquired hernia does not exist. Sellenings<sup>3b</sup> says that traumatic hernia is a surgical curiosity. Mock<sup>4</sup> states: "The decisions of established medicine date back to the pre-compensation days and were based on the testimony of expert authority made in the courts of England especially, and later in our own courts, to the effect that a traumatic hernia could only occur from a direct violence resulting in a definite tearing or rupture of the abdominal wall. All other hernias were claimed to be due to congenital defects, pre-formed sacs, and to be similar to all other diseases which might occur coincidental with occupation but not related to it." MacCready<sup>5a</sup> believes that an ac-

quired hernia is never due to an accident or single increase of intra-abdominal pressure. Graser,<sup>5b</sup> one of the highest German authorities, states that hernia, complete in all its parts, can never arise at the moment of accident or by a single increase in intra-abdominal tension be it ever so great. Coley,<sup>6</sup> in his work at the hospital for ruptured and crippled, states that in a period of thirty-one years he has not seen one hernia caused by a single injury and he feels that an injury of such severity would likely result in death. However, the French speak of the Hernia of Effort, which includes those cases in which the hernia appears during heavy lifting, slipping, falling, coughing, etc.

A very strong argument advanced by Hopkins<sup>7</sup> for the physical examination of employees is based on the fact that railway engineers, firemen, conductors, brakemen, etc., who are required to pass preliminary physical examinations constitute 1 per cent of the so-called traumatic hernias, while the men who do not pass preliminary examinations, composed largely of foreigners, constitute the other 99 per cent. It has been suggested that those found by preliminary examination to have hernias, or enlarged rings, sign releases, while those who pass normal examinations might be compensated for hernias which develop during occupation.

Inguinal hernia is often given a special classification because of the character of its contents, but the old classification with reference to the deep epigastric artery seems to be generally accepted as standard throughout the literature, both local and foreign. However, the writer is certain that many hernias are classified as direct when they are atypical, although they are not mesial to the deep epigastric vessels. Besides the indirect or oblique and the direct, there exists the pantaloons or saddlebag hernia, which is a

\*Presented before the Minneapolis Surgical Society, Dec. 1, 1927.

double hernia on both sides of the epigastric vessels and often is unrecognized at the time of the operation so that only one hernia is cured and the other manifests itself later as a recurrence. Watson<sup>8</sup> states that direct hernias constitute from 5 to 7 per cent of all inguinal hernias; Coley and Downs<sup>9</sup> about 7 per cent.

lives which could have been prevented. Murphy, in his year book, referred to Wolfler's statistics as emphasizing the mortality of procrastination. All authors seem to agree that local anesthesia is preferable in the presence of strangulation.

Among the causes of recurrence all authors agree that incomplete removal of the sac is per-



Fig. 1. The external oblique fascia has been exposed and split well above the external ring. A forceps passed into this rent and out the external ring is especially helpful in a case of strangulated hernia. Wire spring retractors of Farr insure constant retraction and give the assistant free hands.

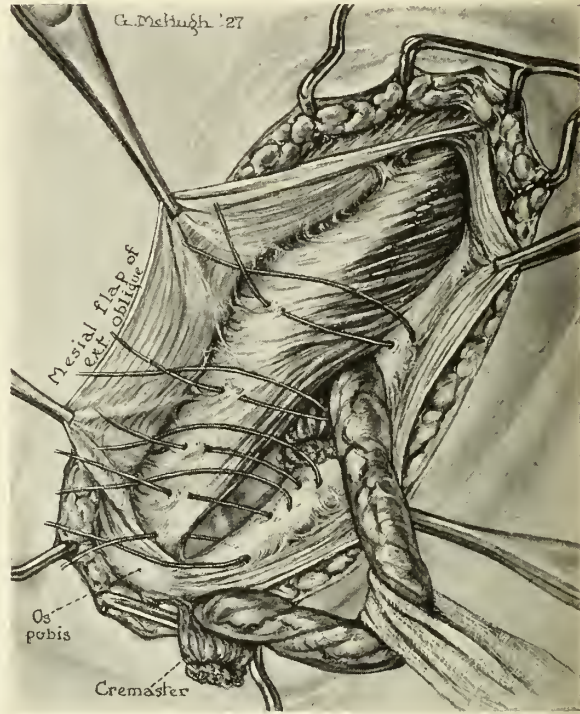


Fig. 2. The external oblique has been separated mesially over the rectus muscle. The sac has been removed and the neck dropped back, the cremaster has been separated from the cord, doubly ligated and divided. This step insures a smaller cord to transplant and is done routinely. Interrupted chromic sutures pass through the white fibers mesial to the red muscle and through Poupart's ligament approximating white fibrous tissues under the cord. The transversalis is first sutured to Poupart's ligament in those cases in which it is adequate.

MacCready's cases were approximately the same. Erdman reported nearly 33 per cent of his series to be direct hernias, which Coley<sup>10</sup> believes is much higher than in any other statistics. The combined direct and indirect hernia is rare but must be searched for at every hernia operation. Erdman reported inguinal hernia operations were done on both sides on 1 in 4 cases and that follow-up showed that 37.4 per cent eventually developed bilateral hernia.

Strangulation is the most serious clinical complication of hernia and warns one of the danger of palliative management. In Wolfler's Clinic,<sup>11</sup> the mortality was 19.7 per cent with a loss of 148

haps the most common. This leaves a pouch, or dimple, into which the abdominal contents crowd with the formation of a new sac and hernia. Watson places secondly faulty methods of closure, such as an improperly chosen operative technic, neglect to make the cord as small as possible, failure to close the internal ring tightly about the cord, failure to properly unite the layers of tissue, and failure of the operation to wholly correct the original defect. Failure to recognize a second sac in the pantaloons type, hemorrhage, and infection, are preventable causes, and when suppuration occurs the percentage of cures falls off rapidly. Taylor<sup>12</sup> reports a recurrence of 25 per cent where infection followed operation for oblique hernia and

50 per cent when infection followed operation for direct hernia, while Erdman<sup>13</sup> reports only 10.9 per cent recurrences in all their infected cases. Injury to blood and nerve supply and strangulation of tissue by sutures constitute other preventable causes, but poor physical condition, such as poor musculature, obesity and general

his cases which returned for re-examination. His records show that 47.9 per cent of all recurrences were noted within six months after operation, 73.9 per cent within 12 months and 98.6 per cent within two years. He believes that if a recurrence does not take place within two years after operation we may consider the case

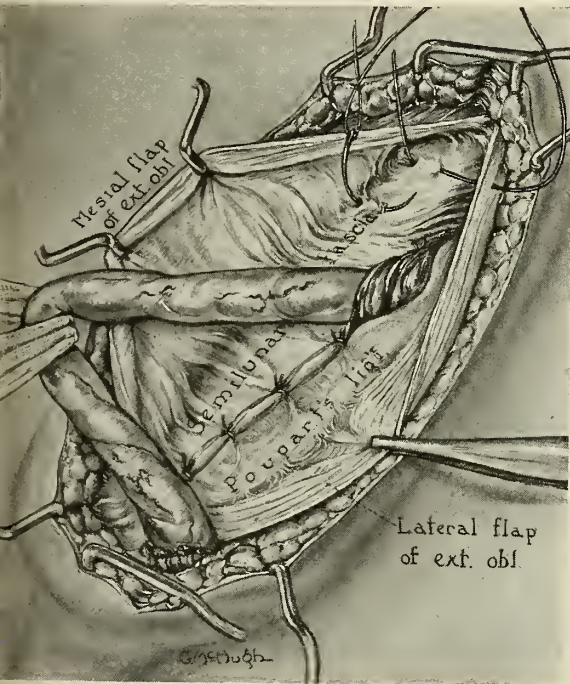


Fig. 3. After suture of the white fibers of internal oblique to Poupart's the cord is retracted mesially and the external flap of external oblique is turned over this line of suture and under the cord. This will give a wide fibrous approximation and a nearly transverse direction to the upper portion of the new canal.



Fig. 4. The suture of the external leaf of external oblique continuous with Poupart's ligament has doubly reinforced the original hernial defect. This method gives additional security to the region directly above the pubes where direct herniae often recur. The transverse upper part of the new canal has been established.

debility, whether due to general disease or to senility, are important causes which the surgeon cannot prevent. McGlannon<sup>14</sup> in a recent work says that the causes of failure to cure hernia fall into two groups, those due to anatomical peculiarity of the patient, and those due to accidents and omissions in the course of the operation or to interference with the process of healing.

LaRoque<sup>15</sup> summarized thus: "Recurrent hernia represents the incompletely removed original hernia, or the development of an incisional rupture following the breakage of sutures or tissues by coughing, vomiting, or wound infection."

The work of Erdman<sup>16</sup> is especially noteworthy because of the extreme care used in repeated examinations and the large percentage of

cured. Reports of recurrences in hernia, according to Watson, vary from 1 to 10 per cent. In a review of reported series of cases the writer has selected the following which are grouped as to type of hernia.

#### RECURRENCES IN INGUINAL HERNIA IN GENERAL

Coley and Hoguet<sup>17</sup> in 3,725 cases treated by the Bassini operation had .38 per cent recurrences while in 792 operations treated by the Ferguson method 1.3 per cent recurred. Schwartz<sup>18</sup> in 207 cases treated by the Bassini method had 5.3 per cent recurrences. Ricketts<sup>19</sup> collected from the literature 6,027 operations for inguinal hernia by thirty-four surgeons with 5.58 per cent recurrences.

*Recurrences in Indirect Hernia.*—Lameris<sup>20</sup> in 511 cases treated by the Bassini method had recurrences in 3.9 per cent. Erdman<sup>21</sup> treated 532 cases by the Bassini method with 3.2 per cent recurrences but in 112 cases in which the cord was not transplanted only 2.67 per cent recurred. Erdman reports 665 oblique hernia operations

Erdman reports that in 313 direct hernias with all methods used by them 16.61 per cent recurred. Taylor reports 47 operations for direct hernias with 29.7 recurrences. Coley in 280 direct hernias in the male adult had 16 per cent recurrences.

*Recurrences in Pantaloon or Saddlebag Her-*

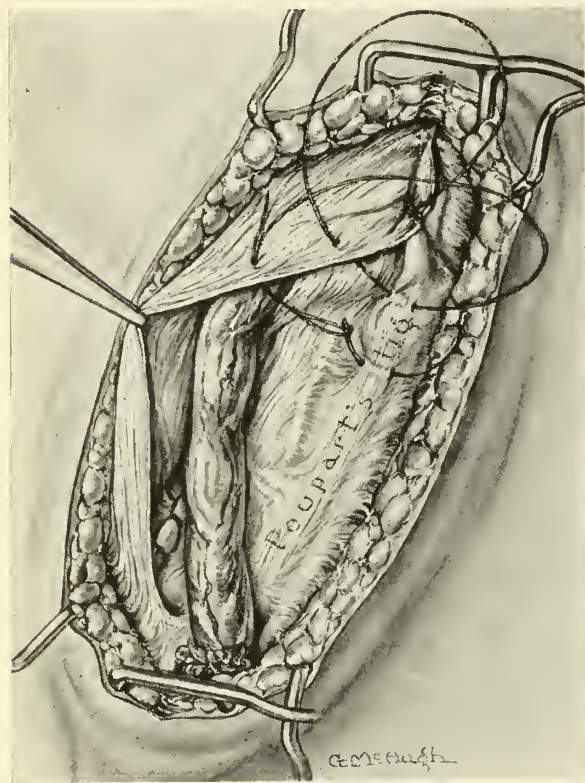


Fig. 5. The mesial flap of external oblique is being sutured over the cord which establishes the balance of the new canal and the external ring. Poupart's ligament underlies the external flap to which the mesial edge is attached.

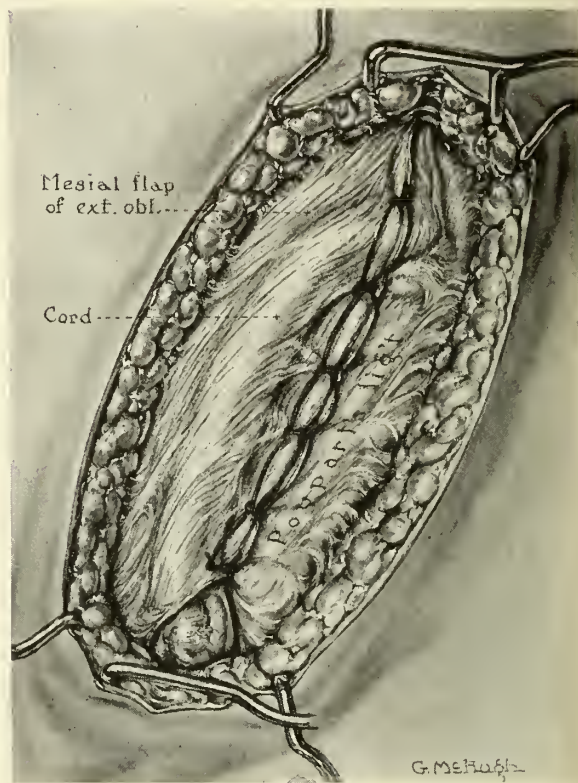


Fig. 6. Fascial closure is now complete, effected by three layers of tissue and three lines of sutures. The course of the new canal is visualized under the mesial flap of external oblique.

with 3 per cent recurrences by all methods used by them. Taylor in 356 oblique hernias had 8.4 per cent recurrences. Coley in 332 oblique hernias had 8.7 per cent recur.

*Recurrences in Direct Hernia.*—Watson states that in the hands of experienced surgeons recurrences run from 10 to 20 per cent in direct hernias, while many surgeons experience recurrences as high as 25 to 50 per cent in similar cases. Lameris in 102 direct hernias treated by the Bassini method had 28.4 per cent recurrences. L. Davis<sup>22</sup> experienced 15 per cent recurrences. Erdman in 185 direct hernias treated by the Bassini method had 15.67 per cent recurrences but when the cord was not transplanted in 25 cases there were 28 per cent of recurrences.

*nia.*—Erdman<sup>23</sup> had 14 per cent recurrences and Coley had 12.5 per cent recurrences in twenty-four cases. Murphy reported a gradually increasing recurrence of from 1 per cent under 1 year to 9 per cent in patients over 60. The age at which the largest number of hernias occur is during young adult life when activity is the greatest, in whom operative recurrences vary from 1 to 10 per cent. Erdman had 10 per cent recurrences in indirect hernias and 42.8 per cent in direct hernias in patients over 60 years of age. The great divergence of recurrence statistics is partly due to the fact that many are based on follow-up letters and not on follow-up examinations as are Erdman's. The opinion of Seelig is that the low percentages are too low and that the

high percentages are more nearly accurate and that in the hands of inexperienced surgeons, often beginners, they are much worse.

Coley followed up 263 operations for indirect hernia in male children and found no recurrences. He believes that there should be practically none in children with or without cord transplantation if the sac is completely removed. Herzfeld performed 1,000 consecutive operations for inguinal hernia in children with but one recurrence (0.1 per cent); 266 were over and 734 were under one year of age.

There are comparatively few spontaneous cures of hernia even in childhood and often when the hernia does disappear it will return again in later life under the stress of heavy lifting, coughing, etc. The usual tendency displayed is for the hernial sac to increase in size, constantly stretching out the abdominal wall, weakening the tissues and reducing the chances for ultimate successful surgical repair. In many instances the hernia continues to become progressively larger in the presence of a truss, which by its pressure causes an attenuation of the abdominal fascia. In other instances the truss fails to retain the viscera within the abdominal cavity. Andrews<sup>26</sup> states that the temporary prescribing of a truss is objectionable, as postponing operation only reduces the chance for a surgical cure. The patient should decide at once whether he will have an operation or wear a truss permanently. He also states that when truss fitting is turned over to a layman without proper medical supervision little success can be looked for. Sixty-two per cent of trussed patients questioned by him had never been told to apply the truss in the reclining position. Santon<sup>27</sup> found that in more than 96,000 patients treated by truss only 4.5 per cent were cured.

In uncomplicated operated cases Coley<sup>24</sup> experienced a mortality of .37 per cent. Watson collected 8,000 herniotomies with .37 per cent mortality while Herzfeld<sup>25</sup> in her series of 1,000 cases had one death from status lymphaticus in which the patient died on the operating table—a mortality of 0.1 per cent. Edmund Andrews states that the danger of herniotomy in children is less than tonsillectomy, an operation often performed with the slenderest indications.

Seelig<sup>28</sup> places the principles of hernia repair under three headings:

1. High ligation of the sac.
2. Adequate reinforcement of the defective abdominal wall.
3. Primary wound healing.

High ligation of the sac implies a wide liberation of the peritoneum about its neck when it may be closed within by a peritoneal suture or by transfixing or by ligating the base. LaRoque<sup>29</sup> makes a muscle splitting incision into the abdominal cavity 1 inch above the neck and closes the sac from within. Regardless of how the closure is accomplished, all authorities agree that the sac must be entirely removed. Adequate reinforcement of the defective abdominal wall is far from a standardized procedure. In children the cord may or may not be transplanted, but in adults the majority of statistics favor the Bassini operation in which the cord is transplanted. The numerous modifications of the Bassini technic with the idea of fewer failures leads one to conclude that there is no specific operation and that

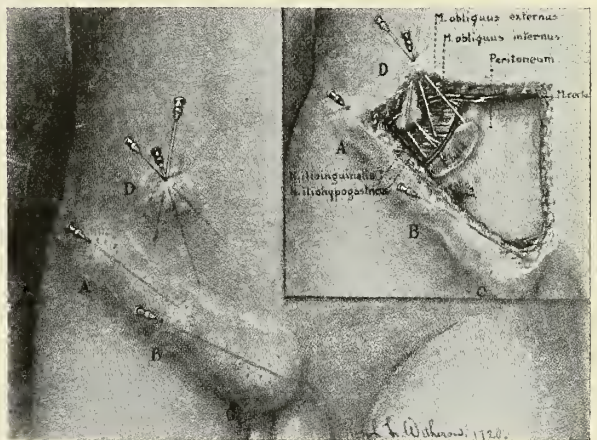


Fig. 7. Showing local anesthesia infiltration and blocking after the technic of Farr. Photograph of illustration from text.

all are followed by failures. The greatest recent step forward comes from the research of Seelig in which he shows that facia-to-fascia closure is the strongest.

The greatest number of failures is the repair of recurrent hernias and here the use of buried foreign material fails because of the high percentage of infection. On the other hand the use of living fascial sutures after the method of McArthur<sup>30</sup> or Gallie,<sup>31</sup> although scarcely suited for the simple cases, is of greatest value in the repair of recurrent cases. Gallie has had no recurrences in 100 cases followed for two years. McArthur cuts the fascia strips from the

edge of the external oblique and Gallie cuts them from the fascia lata with which he weaves the defect. These living sutures unite with the fascia and survive as the original fascial strips.

Six years ago I served with Dr. A. T. Mann, at that time Chief of the Surgical Service of the Veterans' Hospital at Minneapolis, who attempted to standardize certain principles in the repair of inguinal hernia in that hospital. These principles which he advocated serve as the basis of the technic here described with certain personal modifications in an effort to secure a greater white fibrous tissue approximation as advocated by Seelig. The method has been applied by us in a large number (more than 500) with great personal satisfaction. I have made an earnest personal effort to follow several hundred cases but our Government patients are scattered over more than six states so that personal examination is out of the question. Many ex-service men seemed to fear impairment of compensation rating and a questionnaire, although answered, did not afford information for reliable conclusions.

All operations by the writer, and nearly all by the other surgeons on the staff, were performed under local anesthesia.

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DR. A. T. MANN: This paper on Hernia has been very interesting and it has been well presented. This operation is one I devised some years ago in a search to improve the Bassini operation and its well known modifications. It was published about 1912. There are a few practical things I wish to touch upon.

(1) The cremaster is inserted between the conjoined tendon and Poupart's ligament from the spine of the pubis back along the pectineal line. If this is thoroughly cleaned away here, the conjoined tendon will come into a broad, direct contact with Poupart's and Gimbrernat's ligaments when sutured.

(2) The sac should be ligated in such a way that the puckered stump will be drawn away from the cord as it emerges through the internal ring. Any pouch in it will not then be pushing outward into the ring, but against the firm belly of the muscle, where it can do little harm.

(3) The cremaster muscle should be separated from the cord. It can then be tucked under the conjoined tendon and its muscle add its strength to the repair line. Sometimes one will suture it into place and some-

times it may lie so well in place that sutures are not needed.

(4) The cord should be cleaned of adventitious tissue and made small in that portion which is to lie in the internal ring. The rest of the cord does not matter so much. I do not believe that the veins of the cord should be tied and removed, as a rule, as there is a marked tendency to thrombosis in the remaining vessels. This is one cause of atrophy of the testicle.

(5) The internal ring: Before the first line of sutures are placed it is excellent practice to insert a finger against the outer border of the internal ring and root around just enough to stretch the loose tissue, which is practically always there, until the finger comes up against the firm belly of the muscle, and so insure a firm upper border to the ring.

(6) Great care should be used in placing the first row of sutures so that the ring will be snug enough about the cord, but not sufficient to choke it. The main line of sutures should be smooth, but not tight enough to cut off the circulation in the tissues within their grasp. We feel that tight sutures are one cause of recurrences and a tight ring a cause of atrophy of the testicles.

(7) The lower flap of the aponeurosis of the external oblique is already grown fast to Poupart's ligament. This insures strength added to the first line of repair when it is drawn under the cord and fastened well over onto the recus sheath and on the upper surface of the internal oblique and the conjoined tendon beneath the upper flap of the aponeurosis. The scar tissue holding it will be from half an inch to three-quarters of an inch wide and the suture line well away from Poupart's. The carefully placed suture below the internal ring strengthens the ring. This flap, then, strengthens the internal ring, the external ring and the entire first line of repair with a firm tissue sutured at a good distance above Poupart's and the first line stitches.

We feel that this modification of the Bassini operation offers a method which promises better results than the straight Bassini operation or its usual modifications.

DR. R. C. WEBB: This has been a presentation of a very thorough and apparently satisfactory method of repairing a hernia. I should like to mention further the work of Dr. Erdman, to whose statistics Dr. Maxeiner has referred. Dr. Erdman's work was done at the New York Hospital and part of it was during the period in

which I served as House Surgeon. In 1913 their very thorough follow-up system was established and a subsequent report is obtained upon about ninety-five per cent of the cases. The members of the House Staff and the Attending Staff systematically worked at this follow-up work and as a result the statements concerning ultimate results are based upon actual knowledge rather than upon possibly prejudiced opinion.

Doctor Maxeiner called attention to the fact that there were fewer recurrences with the Ferguson operation than with the Bassini in Erdman's statistics. This may possibly be explained by the fact that the Ferguson operation was used in the younger patients.

In the presentation tonight the tape method was used in holding the cord away from the field. In this connection it is well known that pulmonary infarcts are most common after strangulated hernias where there has been a stasis and possibly thrombosis in the veins of the cord. For many years I have made a practice of holding the cord away from the field by holding it back with two Allis clamps passed under it and fastened to the lower edge of Poupart's ligament and then laid on the thigh. In this manner we avoid some of the manipulation attendant upon the use of a gauze tape under this mass of delicate veins.

DR. KENNETH BULKLEY: Dr. Maxeiner's paper on inguinal hernia is of importance and is opportune, not only because of the operative technic which he advocates and on which he is to be congratulated, but because it brings to our attention the subject of hernias. Dr. Maxeiner has cited a long list of authorities, all of them emphasizing the fact that an inguinal hernia is practically never produced by a single act of violence unless that act be in the form of a piercing or penetrating injury in the region of the canal. As you all know, these cases of inguinal hernia are constantly coming before our Industrial Boards and Commissions for decision as to whether the employer shall or shall not be responsible for them. Personally I see rather a large number of these cases and it is a constant surprise to me to hear physicians testify under oath that in their opinion the hernia which the individual patient has, has been caused by the accident under discussion. Fortunately it is not our function to say whether an employer is or is not liable, but it does seem to me that it is our function to testify as to what the probable cause of the hernia is and I think that none of you, after hearing this paper of Dr. Maxeiner's, can say otherwise than that a given hernia is not, in a majority of instances, produced by any single accident.

## INTRA-THORACIC GOITER\*

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**M**Y reasons for selecting intra-thoracic goiter as a subject are:

1. Cases have come under my observation in which the condition had been previously overlooked. This has occurred, not only in the general and preoperative diagnosis but also during the operation of thyroidectomy.

2. The removal of an intra-thoracic goiter, which at first sight may appear to be a very formidable undertaking, is usually simple and relatively safe.

3. The relief obtained from the removal of this distressing condition is so marked that no patient should be denied the advantage of surgical treatment.

Seven patients with intra-thoracic goiter have come under my observation in a series of 500 goiter operations. Of these, five were operated upon. One was seen in consultation and operation advised. One was over 70 years of age and had been treated for asthma and angina pectoris. The series included one so-called "plunging goiter" and sixteen substernal goiters. There were several others where the lower pole was below the level of the clavicle, but these were not considered worthy of special classification.

In the seven cases which form the basis of this study the tumors were entirely within the thoracic cavity and attached to the lower pole of the thyroid gland by a narrow pedicle.

Five were in females and two in males. Three were definitely toxic with basal metabolic rates of plus 45, plus 55, and plus 70 per cent. In only two of the five was a preoperative diagnosis made by *x*-ray plates.

When a patient, the subject of an adenomatous goiter, has distress in breathing, a sensation of pressure in the thorax, and dilatation of the superficial veins over the front of the chest, intra-thoracic goiter should be at once suspected. If the enlarged thyroid does not move freely with the larynx and trachea in the neck when the patient swallows, our suspicions should be further aroused, and if the index finger cannot be placed

between the lower pole of either lobe and the upper border of the sternum and clavicle, a radiogram of the chest should be taken. But some or all of the above mentioned symptoms may be absent even with a fairly large intra-thoracic goiter and it is then that the condition is so apt to be overlooked.

Ordinary means of physical examination such as percussion and auscultation do not give satisfactory indication as to the presence or absence of intra-thoracic goiter. At best, indefinite dullness may be elicited on percussion, depending on the size of the tumor.

The diagnosis of intra-thoracic goiter resolves itself, therefore, into the proper interpretation of well taken stereoscopic *x*-ray plates.

When should *x*-ray plates be ordered? Some have said that in all cases of adenomatous goiter of long standing *x*-ray plates should be taken to exclude the possibility of extension downwards into the mediastinum. Only by making this a routine could one be sure that such a condition would not be overlooked. But when we consider the comparative rarity of intra-thoracic goiter, this would seem a rather unnecessary waste of plates and also an extra expense to the patient which should if possible be avoided.

We ask for *x*-ray plates under the following circumstances:

1. When a patient has an adenomatous goiter where the pressure symptoms such as dyspnea (obviously not of cardiac origin) are out of proportion to the size of the tumor in the neck.

2. When there is a small nodular goiter and a tugging can be felt at either pole when the patient swallows.

3. When toxic symptoms are present with elevated basal metabolism and no evidence of enlargement of the thyroid gland, especially in the absence of exophthalmos.

4. When there are dilated veins over the chest wall, indicating interference with the venous return.

5. When there is an unproductive cough, and ordinary examination of the throat and chest are

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negative, especially when this is associated with adenomas of the thyroid.

6. All cases of asthma and angina pectoris associated with an adenomatous goiter.

Having ordered *x*-ray plates, we find that either the superior mediastinum is a negative, which settles the issue, or there is a shadow which is probably one of the following: (1) Intra-thoracic goiter; (2) aneurysm; (3) dermoid cyst; (4) malignant tumor; (5) tuberculosis in the mediastinal glands or cold abscess secondary to caries of the upper thoracic spine; (6) Hodgkin's disease or lymphatic leukemia; (7) persistent or enlarged thymus; (8) lipoma.

Norris and Landis<sup>1</sup> state that "mediastinal tumors of the benign types are of pathological interest only and during life are not to be distinguished one from the other, with the exception of dermoid cysts." Anyone who has had the responsibility of a consultation on a case of mediastinal tumor would not agree that these tumors are of interest only to the pathologist.

The following findings usually help to confirm the diagnosis of aneurysm of the aorta: (1) Pain; (2) cardiac symptoms; (3) murmurs; (4) positive Wassermann (70 to 85 per cent); (5) variation of pulse on either side; (6) pulsation of the tumor under the fluoroscope.

The symptoms produced by a dermoid cyst in the superior mediastinum are the same as those of any innocent tumor, the severity of the symptoms being in proportion to its size. Dyspnea, cough, sputum and pain are those commonly noted. When ulceration into the trachea occurs, hair in the sputum is diagnostic.

In intra-thoracic goiter there is an up and down movement synchronous with swallowing which may be detected by the fluoroscope. This up and down movement is characteristic of goiter and occurs in no other condition. This finding would naturally be absent in a large intra-thoracic goiter held tightly against the upper inlet of the thorax by a short pedicle.

*En passant*, I would like to draw your attention to an important article by Evan and Leucutia,<sup>2</sup> who state that valuable information regarding the types of tumor cells present can be gained by observing the effect of radiotherapy.

In discussing the diagnosis, two questions arise: (1) Can a goitrous tumor occur in the thorax attached to an otherwise normal thyroid

in the neck? (2) Is it possible to have an intra-thoracic goiter not attached to the thyroid gland (*i.e.*, developing from aberrant thyroid tissue)? These two conditions must be extremely rare but their occurrence is mentioned in the literature. Kocher in his book "Operative Surgery" mentions the pedicle being attached to a normal

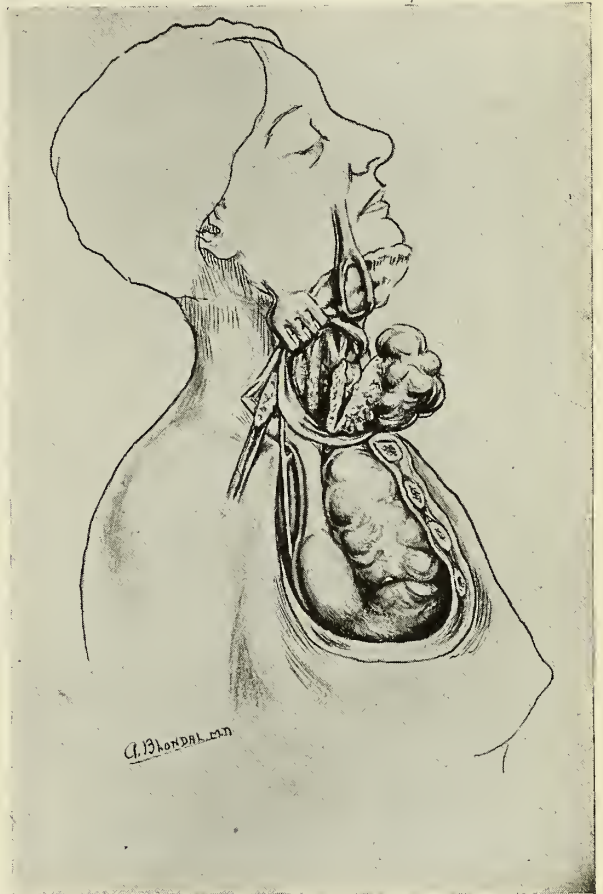


Fig. 1. The lobe in the neck when resected makes an efficient handle for delivering the goiter from the thorax.

or goitrous lobe in the neck. Bevan<sup>3</sup> records a most interesting case of an intra-thoracic goiter where no thyroid gland could be found in the neck. The usual thyroid vessels passed into the thorax, supplying the tumor, which appeared to be all the thyroid the patient had.

Aberrant thyroid gland tissue has been found in the following situations:

1. In the mediastinum at the aorta.
2. Near the hyoid bone, base of the tongue and along the thyroglossal tract.
3. Behind the pharynx.
4. Within the larynx and trachea (intra-tracheal goiter).

5. In the pleura (Osler).
6. In the fontal sinus (Prowse).
7. In the ovary (Mayo-Maclean).

#### INDICATIONS FOR OPERATION

It is questionable whether the incidence of malignancy in adenomatous goiter is, in itself, sufficient indication for the removal of all adenomatous goiters occurring in the neck.

Added to malignancy, the frequency with which toxic symptoms develop increases the urgency for operation, especially in those over forty years of age.

The incidence of toxicity and malignancy is higher in intra-thoracic goiter. Jackson<sup>4</sup> states that 2 per cent become malignant and 30 per cent toxic. Wuhrmann<sup>5</sup> examining ninety-one tumors of the thyroid occurring in the mediastinum found seventy-five benign and sixteen malignant (21 per cent).

Apart from the pressure symptoms and the possibility of malignancy and toxicity, it is most imperative that intrathoracic goiters should be diagnosed early and removed. In this stage the operation can with very little difficulty be performed. If left till they are of large size they become one of the greatest problems of surgery.

#### SURGICAL TREATMENT

It is not within the scope of this address to discuss x-ray and medical treatment of this condition. Those who are interested can find excellent articles on the subject, one in particular, on irradiation in substernal goiter by Grier<sup>6</sup> of Pittsburgh. My own cases had medical treatment and one at least a thorough course of deep x-ray therapy without the slightest relief.

The anesthetic is very important. Many men use local anesthesia. My preference is nitrous oxide gas and oxygen but this must be given by one specially trained. In case of tracheal collapse it is necessary to have a machine by which the gases can be administered at a pressure greater than that of the atmosphere. In one case of tracheal collapse ("scabbard trachea") Dr. Webster kept the patient going for twenty minutes until both lobes were removed, when the patient began to breathe easily. This case, which was not intra-thoracic, without the aid of this special apparatus would have required a tracheotomy.

For intra-thoracic goiter operations, I have a special *long flexible tracheotomy* tube always at

hand, though so far it has not been necessary to use it. It is a great misfortune to have to resort to tracheotomy, but an emergency may arise necessitating it. Another alternative is the intratracheal tube but its insertion is not without danger when the trachea is distorted.

In every goiter operation the lower pole of each lobe should be examined for extension down-



Fig. 2. X-ray plate of intra-thoracic goiter. The arch of the aorta is displaced slightly to the left.

ward. In one patient seen and examined by two diagnosticians, an intra-thoracic goiter the size of a baseball was found at the operation attached to the right lobe of a rather small adenomatous goiter. No one had suspected such a condition to be present on examination.

#### OPERATIVE TECHNIC

An intra-thoracic goiter may, as pointed out, be entirely within the thorax without any attachment to the thyroid gland. Surgically it would have to be dealt with as a benign mediastinal tumor.

The usual type of intra-thoracic goiter is one which is attached by a narrow pedicle to the lower pole or isthmus of the thyroid gland in the neck. The thyroid gland may itself be normal or in a condition of goiter, usually the latter. The method of approach should always be from the neck. The low collar incision has many advantages over the lateral or the vertical incisions. In none of my cases was it necessary to detach the sterno-cleido-mastoid muscle from its

attachment to the sternum or clavicle. The infrahyoid muscles, which I seldom cut across except in removing very large goiters, were divided transversely. *The keynote in the operation* is to ignore entirely the intra-thoracic portion, until the goiter in the neck has been resected (Fig. 1). This is done as in the ordinary operation of bilateral resection with the one exception that the lobe to which the pedicle is attached is divided so that the portion removed remains attached to the pedicle. The resection of the lobe should be from above downward, cutting through the gland and dividing the isthmus. As the pedicle is approached it is carefully separated with the finger, keeping close to its posterior surface so that the recurrent laryngeal nerve is displaced backward out of danger. The last part between the conserved portion and pedicle is now clamped and divided. The anterior part of the lobe is now free in the neck but attached by the pedicle to the tumor in the thorax. Using the lobe as a handle, the index finger is passed carefully around the upper part of the tumor, separating the loose cellular adhesions, thus freeing it from the structures in the mediastinum. The tumor can now be pulled out of the thorax. Any remaining attachments are caught with forceps before being stripped from the tumor. These attachments are ligated and the ends of the ligatures left long. This serves a two-fold purpose. Not only is bleeding controlled but the obliteration of the cavity which occurred when the tumor was dislodged, being as it were turned inside out, is maintained by stitching the ligatures to the sterno-mastoid muscle, just above the clavicle. By this procedure the period of drainage is shortened several weeks from what would have occurred were the cavity packed with gauze. The intrathoracic pressure causes the lungs to occupy the space. Light packing or tube drain as in ordinary thyroidectomy is used in the neck.

Should the tumor prove too large to be delivered through the upper opening of the thorax (*i.e.*, more than 10.5 cm., in the transverse diameter) two methods may be resorted to:

1. A cyst may be tapped and the collapsed wall pulled out of the thorax.
2. A solid tumor may be reduced in size by morcellement, being careful to keep within the capsule. The blood supply to the tumor having been cut off from above by resection of the

lobe, bleeding from the surrounding adhesions should not be alarming. The relative measurement of the tumor and the thoracic inlet can be taken from the *x-ray* plates.

Trans-sternal mediastinotomy is a procedure that I think should be very rarely called for in this condition. I have reviewed the literature



Fig. 3. Pathological specimen. Intra-thoracic portion measured 10 cm., being slightly less than that of the superior thoracic inlet (transverse diameter, 10.5 cm.).

of some of the cases of intra-thoracic goiter removed by anterior mediastinotomy and from measurements of the tumor in the radiograms compared with that of the superior inlet of the thorax (10.5 cm.) it would seem that this extreme measure is sometimes done unnecessarily. While the operation undoubtedly has its place, it is interesting to note that in Hunermann's<sup>7</sup> report of 500 operations for substernal and intra-thoracic goiter at Innsbruck, mediastinotomy, as advocated by Sauerbruch, was found necessary only once.

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#### DISCUSSION

DR. ARTHUR T. MANN (Minneapolis): The subject being discussed tonight is certainly an exceedingly interesting one. Intra-thoracic goiters are not common, but we probably all have had some. I have had quite a few and one or two more than I have wanted. I do not believe Dr. Maclean has expressed himself quite strongly enough on the seriousness of the operation and the results of the operation in some of these cases.

One of the first ones I had was the sister of a doctor who was in the operating room at the time and was assisting with the operation. We were using the gas oxygen anesthesia. There is one thing about the nitrous oxide and that is that all the veins are full. They are full of blood and they bleed if you happen to cut any of them or tear any of them, and the tumor is larger than it usually is because of the blood supply which engorges it. I don't think I ever tried an intrathoracic goiter again with the gas oxygen anesthesia. Of the general anesthesia, I certainly would prefer the quiet of the ether anesthesia.

I think the doctor is absolutely right in his method of attack. If you will separate the isthmus early you will get a mobility which you do not have when the isthmus is not separated. Then, by taking care of the superior vessels you are able to get considerable more mobility. In this case it was easy to get a finger around and get the lobe loosened, but every time we tried to get the tumor up the patient stopped breathing, so I would let it back and take another try and each time I got it a little more loosened. These glands are not absolutely solid but molded, as a baby's head is molded, as they come through this space. We got to the point where I looked at the doctor and said, we better take a chance. For part of a minute she stopped breathing and by the molding of this tumor we got it out but it was a moderately desperate case. After it was out her color came back and she started breathing. Fortunately, we had no collapse of the trachea.

Some of these goiters come out easily. The distance from front to back is short and when the mass is large there is where the trouble arises. The distance from side to side is ample so these tumors have to be molded sometimes and you have to stop the breathing to get them out in this way. Sometimes tumors will be fairly firm and it will be almost impossible to do that. There are a number of small vessels that

run into the gland from below. You can take some of the glands out either by breaking them up with the finger and when the bleeding begins put some gauze in and hold it until the bleeding stops and then you will make the mass of the tumor smaller so that it can be worked through.

I had one case which pretty nearly raised my hair on end. I did this under local anesthesia and had a well contained woman to start with and she helped me all the way through. If I had had another type of person I am afraid I should have had a great deal of difficulty. She had one of these tumors which are rather difficult to take out, but it came out, everything just as nice as possible. I spoke to her and she answered me. She said she was feeling all right. Immediately after that she stopped breathing; had a collapse of the trachea. We had the tracheotomy sets ready because I was a little afraid she might get a collapsed trachea, but the long tube which is flexible I could not find so I took the longest one I had, did a tracheotomy and put it in and we got her breathing very nicely. She had a spell of coughing at the end of the second day. We pulled the tube out and put it back and she was all right at that time. About every six hours she would have another spell of coughing. There was a length of about one-half to three-fourths of an inch inside of the lower end of the outside tube which was in the trachea and there the mucus was collecting. By pushing the inner tube down a little and pulling it out, we got the bulk of the mucus on the tube. After that we kept the inside cleaned out. She made a very good recovery up to the time I told her she could go home. That day she had an embolism of the lung with the pallor, small and rapid pulse, and shock, and it looked as if she was going to go. She became better in two or three days, however, and went home a week after that. We had not only the collapse but the embolism in her case.

A collapsed trachea is a very serious thing and it does not always collapse when you are through with the operation but may collapse later on with a sudden inspiration. The trachea is so thin that it is more or less like a double ribbon and a good deal like a valve on some of the gas masks. When it is once collapsed you have your trouble and you have it right away. The tracheotomy set should be left at the bedside and everybody cautioned so that they will look out for this condition.

In the case of a collapse with a tracheotomy tube in place, when can you pull the tube out? When the granulation tissue fastens the soft trachea to the parts around it.

In an emergency, if no tracheotomy tube is at hand, the end of a stomach tube can be used for the purpose, or a good sized catheter with the end cut off.

DR. F. A. OLSON (Minneapolis): I wish to congratulate Professor Maclean on his splendid presentation of this subject and also to congratulate the society on its opportunity to hear him.

The diagnosis of tumors in the upper chest, such as true intrathoracic goiter, has always been of keen in-

terest. Doctor Maclean has covered the field in a very thorough manner. I would like to add, however, that the fluoroscopic examination should never be omitted in any case of doubt. The stereoscopic radiograph will not always settle the question. It is particularly necessary to take sufficient time to fully relax the accommodation when using the fluoroscope. The expansile or transmitted pulsation, together with the location, contour, relationship to other organs, the variation in density, etc., frequently defines the lesion.

It is assuring to any operator if he will remember that an intrathoracic goiter is always encapsulated, and, however close it may be to highly vital areas, there are no large vessels that lead directly into it.

DR. MACLEAN (closing): I hope I have not minimized the dangers of attempting to remove an intrathoracic goiter. I mentioned that I always have practically everything at hand that one can have in case of accident or emergency and the two dangers as I see them are collapse of the trachea and bleeding. Of the two, I think collapse of the trachea is very much more serious, as it is more difficult to control.

These tumors start in the neck and grow downwards. They originate as a rule in the neck and gradually work down in the chest. It is easier for them to grow into the chest once they are below the inlet than in any other direction. The blood supply is all from up in the neck and not from the vessels in the thorax. I think if you have controlled the bleeding by resecting

the lobe in the neck, which is a point I do not think is mentioned by many writers, there should not be much bleeding from the thorax. I do not think it is necessary to ligate the inferior thyroid outside of the capsule. We used to do that in goiter operations many years ago but in the ordinary bilateral resection not many are doing that now and that stage is practically the same as an ordinary goiter operation. The only point is you keep the lobe in the neck attached to the pedicle to be used in the further manipulation of the intra-thoracic portion.

Dr. Mann mentioned that you can use a stomach tube or catheter in collapse of the trachea. They can be used of course—a flexible rubber tube in case one has no tracheotomy tube. If you are up against it, sometimes the stomach tube with the opening at the side and end would be the ideal thing or an intratracheal tube could be passed quickly into the trachea through the larynx.

I have not had any very dangerous cases; that is, the tumors were not especially large, not too large to be delivered through the upper opening of the thorax. These cases should be diagnosed before they get too large, because then they are easier to remove.

Fluoroscopy was mentioned by one of the doctors here tonight. Fluoroscopic examination in a definite case may save the patient from going on to the expense of x-ray plates. If plates are made they should be stereoscopic. X-ray plates are important if there is any doubt in the diagnosis.

## THE TUBERCLECID FRAUD

Charles F. Aycock, "Consumption Cure" faker, has been debarred from the mails. He has for years sold a fraudulent "cure" for consumption called "Tuberclecid." This nostrum was exposed seventeen years ago; at that time Tuberclecid sold at \$15 for a two-ounce bottle and was found by the A. M. A. Chemical Laboratory to be essentially a solution of cresote, or guaiacol, in olive oil. Eleven years ago, he was prosecuted in California, but the case was dismissed. Since then, Aycock has continued to defraud the tuberculous public, until finally the postal authorities have proceeded against him for fraudulent use of the United States mails. About January 1, 1928, a fraud order was issued against the Aycock Medical Institute, Aycock Medicine Company, Aycock Medical Company and Charles F. Aycock. There is reason to believe, however, that Aycock is evading the order by doing business under the name "Tuberclecid Institute," 402 Delta Building, Los Angeles, California. (Jour. A. M. A., March 3, 1928, p. 710.)

## ARGYROL OMITTED FROM N. N. R.

Argyrol is included in New and Non-official Remedies as a brand of mild silver protein, U. S. P. At the expiration of the period for which Argyrol stood accepted, the Council on Pharmacy and Chemistry informed the A. C. Barnes Company that the advertising claims for therapeutic efficacy of this product went beyond those of mild antiseptic or protective value allowed for mild silver protein and asked that the firm present evidence to substantiate these claims; the firm was also informed that in order to permit the continued acceptance of the product the labels and advertising must bear the pharmacopeial title, mild silver protein, as a synonym. The firm presented no satisfactory evidence for the therapeutic claims in question and refused to mention the pharmacopeial name on the labels and advertising of Argyrol. The Council therefore voted to omit Argyrol from New and Non-official Remedies and authorized publication of its report explaining this action. (Jour. A. M. A., March 17, 1928, p. 849.)

## PERINEPHRIC ABSCESS\*

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IN THE usually accepted classification perinephric abscess has been considered as primary or secondary, depending on whether the infection was thought to have originated in the perirenal tissues and proceeded to abscess formation or whether the infection started in the kidneys and spread secondarily to the perirenal area. There are no clinical or experimental data to support the view that perinephric abscess originates primarily in the perirenal tissues. Hunt, in a recent review of the literature, and in cases observed in the Mayo Clinic, was unable to find a single instance in which primary infection of the perirenal tissues resulted in abscess formation independently of primary renal or extrarenal infection. He proposes a classification of perinephric abscess on the basis of etiology, such abscesses being of renal or extrarenal origin. Those of renal origin are caused in order of frequency by pyonephrosis, lithiasis, tuberculosis and traumatic rupture of the kidney. Those of extrarenal origin are the result of metastasis, largely to the renal cortex followed by direct extension to the perirenal tissue. It is my purpose to consider here the second group, namely, perinephric abscess of metastatic or extrarenal origin.

Perinephric abscess, not secondary to primary disease of the kidney, is a fairly common condition, often undiagnosed, especially in the early stage. When it is accompanied by disease of the kidney attention is focused on the renal area and the condition is not likely to be overlooked. However, with the insidious onset and lack of localizing symptoms so characteristic of the metastatic type of perinephric abscess, the condition must always be kept in mind in order to secure a successful termination.

### ETIOLOGY

Brewer, reviewing the work of other investigators and combining it with extensive experimental and clinical observation of his own, concludes that during the progress of any acute in-

fection a certain number of microorganisms find their way into the blood stream and that many of them are excreted through the kidney. If the number of these is comparatively small, if their virulence is low and if the kidneys are in a fairly healthy condition, the transit of these organisms does not give rise to demonstrable lesions. If, on the other hand, the number of organisms is large, if their virulence is high and if both kidneys are diseased, lesions are produced which may go on to any of the types of renal infection or suppuration. Brewer believes that hematogenous infection accounts for a large proportion of renal infection and this contention is borne out by the work of Rosenow on the elective localization of bacteria. Cope, Richardson, Hunt and many others have called attention to the frequency with which perinephric abscess follows acute superficial infections, such as boils, carbuncles, tonsillitis and abscess, and dysentery. Organisms from such areas of infection travel to the kidney by way of the blood stream, often producing one or more cortical abscesses. The usual organism is the *Staphylococcus aureus*. The abscess follows the line of least resistance and spreads peripherally. The fibro-fatty capsule of the kidney is lax, cellular and not extremely vascular and offers little resistance to the spreading infection. Such a metastatic cortical abscess secondary to superficial infection is probably the most frequent cause of perinephric abscess.

Braasch, in 1915, reported a series of sixty-seven cases of perinephric abscess; 18 per cent of these were definitely proved to be secondary to cortical abscess. In 21 per cent the cause was not determined; however, he concluded that they were due in all probability to cortical abscess. Hunt, in 1924, pointed out the relationship between cortical abscess and perinephric abscess. He analyzed 106 cases of perinephric abscess and showed that 55.7 per cent were not associated with any demonstrable primary renal lesion and concluded that they followed on cortical abscess. A cortical abscess may at times spread centrally, breaking through the pelvis of the kidney and

\*From the Division of Medicine, Mayo Clinic, Rochester, Minnesota. Read before the Southern Minnesota Medical Association, Austin, September 30 and October 1, 1927.

## ANALYSIS OF CASES

Case	Age	Sex	Predisposing diseases	Duration of symptoms, weeks	Loss of weight, pounds	Temperature	Urine	Hemoglobin, per cent	Leukocytes, (thousands)	Situation of abscess, side	Stay in hospital, days	Temperature normal, days	Result
1	59	M	Tonsillitis; boils	1	20	100	Normal	61	17.7	Right	8	3	Cure
2	55	M	Abscess on finger	6	33	99 to 101	Trace of albumin	86	15.5	Left	14	7	Cure
3	48	M	Tonsillitis; quinsy	2	17	99.2	Normal	80	18.2	Right	6	Continued draining sinus; died one year later	
4	23	F	Influenza; diarrhea	6		101	Normal	48	23.4	Right	33	27	Cure
5	39	F	Appendiceal abscess; tonsillitis.	20	75	100.2	Occasional pus cell	40	16.0	Right	33	Developed parotitis and pneumonia; died	
6	32	M	Acute swelling at elbow	2		101.8	Normal		13.0	Right	13	2	Cure
7	48	M	Boils	8		101	Trace of albumin; occasional pus cell	68	14.4	Left	13	7	Cure
8	22	M	Boils	4	Marked	99	Trace of albumin		17.4	Right	12	2	Cure
9	39	M	Rectal abscess	40		101	Trace of albumin			Right	10	3	Cure
10	14	F	Tonsillitis	1		102	Trace of albumin	49	18.4	Right	10	3	Cure
11	45	M	Carbuncle	12		99	Trace of albumin	35	24.4	Left	14	2	Cure
12	29	M	Carbuncle	6	60	99 to 104	Trace of albumin	60	23.2	Right	14	5	Cure
13	39	M	Infection of finger	4		100 to 104	Trace of albumin; occasional pus cell	30	18.2	Left	17	Died from general sepsis	
14	27	M	Series of boils	6	30	102	Few pus cells	55	16.5	Right	21	Had a second drainage; cure	
15	25	M	Boils	3	12	100	Normal			Left	14	5*	Cure
16	48	M	Boils	5	Marked	105	Normal	45	14.4	Left	12	4	Cure
17	44	M	Boils	3		100.2	Normal		12.8	Left	10	5	Cure
18	63	M	Boils	4	30	99 to 102	Normal		20.0*	Right	14	4	Cure
19	18	F	Injury to back; boils	3		98	Normal	70	22.4	Left	6	2	Cure
20	39	M	Cold; tonsillitis	1		104	Normal	80	18.6	Right	10	3	Cure
21	22	F	Boils	6		100 to 103	Normal	68	15.2	Left	10	2	Cure
22	30	M	Tonsillitis; boils	5	15	100 to 102.8	Trace of albumin	62	16.4	Right	22	19	Cure
23	14	F	Tonsillitis	8	24	102.4	Normal	49	18.4	Right	10	3	Cure

## ANALYSIS OF CASES

Case	Age	Sex	Duration of symptoms, weeks	Loss of weight pounds	Temperature	Urine	Hemoglobin, per cent	Leukocytes (thousands)	Situation of abscess, side	Stay in hospital, days	Temperature normal, days	Result
24	15	M	2		105	Trace of albumin	75	20.0	Right	16	12	Cure
25	21	M	2		100.5	Normal	55	18.6	Right	30	24	Cure
26	61	F		Marked	101	Few pus cells		20.0	Right	15	2	Cure
27	60	M	6	15	102	Trace of albumin	88	21.8	Right	7	2	Cure
28	36	M	3		99.2	Normal; three examinations	65	18.9 21.4	Right	19	5	Cure
29	35	M	4	25	104	Normal		18.6 22.6	Right	9	2	Cure
30	54	M	1		103	Normal	40	25.2	Right	16	3	Cure
31	24	M	9	15	103	Trace of albumin	83	16.2	Right	13	4	Cure
32	51	M	3	30	99.4	Normal	54	16.3	Right	16	3	Cure
33	15	M	6		100.8	Normal		13.9	Right	14	2	Cure
34	24	M	4		99.4	Sediment; normal sugar	65	26.7	Right	11	2	Cure
35	55	M	2		99.2	Normal		20.0	Left	10	2	Cure
36	39	M	6	Marked	100.4	Normal	60	21.0	Left	16	6	Cure
37	23	M	10	Marked	100	Normal	80	13.5	Right	11	2	Cure
38	27	F	7	35	101	Normal	65	17.4	Right	12	2	Cure
39	27	M	4	21	100.2	Normal	80	14.2	Right	15	3	Cure
40	38	M	4	Marked	101.6	Normal	68	17.0	Left	11	3	Cure
41	30	M	4	25	104	Normal	67	12.8	Right	15	3	Cure
42	15	M	1	Marked	100.4	Normal	49	25.4	Right	13	6	Cure
43	35	M	5	20	100	Normal	60	16.6	Right	14	4	Cure
44	28	M	3	15	101	Normal	72	23.9	Left	16	7	Cure

causing symptoms of pyonephrosis, but the peripheral extension to the perinephric tissue is by far the more common.

Infection by direct extension to the perirenal tissues through the lymphatics accounts for a smaller group of perinephric abscesses. Miller has reviewed the lymphatic circulation of perirenal tissue in its close relation to the retroperitoneal lymphatics. He has shown that infection may travel from the lower urinary tract and genitalia without directly involving the kidneys. Jaffe's case of perinephric abscess following acute gonorrhea and Jordan's case following acute orchitis bear out this contention.

Bilateral perinephric abscess is uncommon. Hunt noted nine cases in the literature. He reported one of Ritchie's cases and added one of his own to the list.

## SYMPTOMS

The clinical course of perinephric abscess is best divided into two stages, that of symptoms only, and that of symptoms and localizing signs.

The onset may be sudden with a severe chill, high temperature and generalized aching. In the absence of localizing symptoms, the condition may be easily mistaken for influenza. However, the usual onset is insidious; the patient is easily fatigued, he feels out of sorts, perspires easily, often has sensations of chilliness, and slight fever, reaching as high as 100°, especially in the afternoon. During this stage, which lasts from one to four weeks, the appetite is lost with consequent loss of weight, and a slight degree of secondary anemia is evident. The leukocyte count may be normal or slightly elevated, there may be urinary frequency or nocturia. Nausea and even vomiting are not uncommon. During this stage there are usually no localizing symptoms and because of the continuous afternoon fever and the rather rapid decline in the patient's general health, tuberculosis or typhoid fever is often suspected.

After a variable length of time during which the patient may have become bedfast, the elevation of temperature continuing or increasing, lo-

calizing signs in the renal area or thorax develop. The patient usually complains of a steady, dull aching type of pain in the costovertebral angle on the affected side. This pain is mild at first and may be relieved by aspirin and heat but gradually becomes so severe that codeine and even morphine are required. Tenderness over the renal area anteriorly and over the lumbar muscles posteriorly on pressure is the rule. However, at times no tenderness can be elicited. If the abscess happens to be large or is situated at the upper pole, elevation of the diaphragm and compression of the lung may result in signs indicating pleural effusion or pneumonia. Actual pulmonary complications such as bronchopneumonia, pleural effusion and pulmonary abscess are not infrequent. If a mass becomes palpable, the diagnosis becomes simpler; however, this sign is present only in about two-thirds of the cases. During this stage of the disease the leukocyte count is uniformly high; the temperature is remittent, reaching as high as  $105^{\circ}$  in the evening. Daily chills are not uncommon. The urine is usually normal except for varying amounts of albumin; occasionally red blood cells and pus cells will be noted on microscopic examination. The diagnosis is rarely made during the early part of the disease before localizing signs have appeared; unfortunately, however, the diagnosis is often delayed when all the signs and symptoms are present. Because of the close relationship between superficial infection and perinephric abscess, the possibility of such antecedent infections should always be borne in mind. Often this lesion is obvious; sometimes it is not. The patient frequently fails to tell of previous attacks of boils because he thinks they are of no significance or because he has completely forgotten them. The lesions may have been so mild as to have escaped the patient's observation completely.

Elmer has called attention to the similarity of the symptoms of perinephric abscess and tuberculous disease of the hip and spine in children. In the early stages, when there is mild fever, malaise, loss of appetite and slowing of the activities of the child, pain on motion of the spine and leg may suggest a tuberculous process. Roentgenologic studies of the bones, a history of antecedent superficial infection and rapid progress of the disease should aid in the diagnosis.

#### TREATMENT

Few cases of perinephric abscess of metastatic or extrarenal origin require more than simple drainage. This is best accomplished through the usual posterior incision for operations on the kidney. Occasionally second drainage is necessary.

#### COMPLICATIONS

Early diagnosis is extremely important in order to avoid the usual complications of perinephric abscess. The abscess, if situated at the upper pole of the kidney, may extend through the diaphragm into the pleural space, causing empyema or lung abscess. It may extend deeper into the substance of the kidney, destroying so large a part of it that nephrectomy may later be necessary. The abscess may extend along the course of the psoas muscle and point in the groin, or extend posteriorly and point in the back.

#### ANALYSIS OF CASES

Forty-four cases were selected in which, so far as could be determined, there was no evidence of primary renal disease predisposing to perinephric abscess, such as pyonephrosis, lithiasis, tuberculosis or traumatic rupture. In seven cases in which there was a question of primary renal disease cystoscopic examination was undertaken to exclude it. Some of the cases analyzed were included in Braasch's report in 1915 and Hunt's report in 1924. I have added cases which have come under our observation since 1924. Of the forty-four cases there was a definite history of superficial infections, such as boils, carbuncles, abscess and tonsillitis, in twenty-three. In the remaining twenty-one cases no such infection was reported. It is believed, however, that in almost 100 per cent of cases of perinephric abscess of extrarenal origin there will be a history of such an infection preceding the onset of the abscess.

The ages of the patients in this group varied between fourteen and sixty-three; 70 per cent of these were in the second, third, and fourth decades. The disease occurred most frequently between the ages of twenty and thirty. Thirty-six of the patients were males and eight females, a ratio of 4.5 : 1. The time between the onset of symptoms and surgical treatment varied between one and forty weeks, the average being five and

six-tenths weeks. There was a significant loss of weight in all cases. The urine was normal except for a trace of albumin and an occasional pus cell; in one specimen sugar was found. The hemoglobin varied between 30 per cent and 88 per cent, the average being 53 per cent. The leukocyte count varied between 12,800 and 34,400. The abscess was found on the right side in thirty-one instances and on the left in twelve, a ratio of 2.5 : 1. In one case there were bilateral abscesses. The temperature varied between 99° and 105°. The temperature was normal in an average time of five days following drainage of the abscess. Pain over the site of the infection was present in all cases. In three cases there was no tenderness over the area of the abscess on palpation. In thirty cases (69 per cent) tumor was palpable. In seven cases roentgenograms and physical signs indicated elevation of the diaphragm on the affected side. Three of the forty-four patients died (a mortality of 6.8 per cent). One died a year after operation; another with bilateral perinephric abscesses died seventeen days after operation from generalized sepsis, and the third, seven days after operation from pneumonia and parotitis.

#### SUMMARY

The classification of perinephric abscess is best made on an etiologic basis, the abscess being of renal or extrarenal origin. Perinephric abscess of renal origin follows on pyonephrosis, lithiasis, tuberculosis and traumatic rupture of the kidney. Perinephric abscess of extrarenal origin is the result of metastasis to the renal cortex, as a rule, followed by direct extension to the perirenal tissue. Forty-four cases of perinephric abscess of extrarenal origin have been analyzed. Cortical abscess was the most common direct

cause of the perinephric abscess. Metastatic perinephric abscess frequently follows superficial infections, such as boils, carbuncles, abscess and tonsillitis. The usual etiologic organism is *Staphylococcus aureus* which travels by way of the blood stream. Perinephric abscess may also result from metastasis along the lymphatics.

The symptoms are localized pain, fever, chills, leukocytosis and the general appearance of sepsis. The urine is practically always normal. Early diagnosis is important. The treatment is simple drainage.

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#### PANCREPATINE

The Anglo-French Drug Co., which markets "Pancrepatine A. F. D.," has not requested an examination of the preparation by the Council on Pharmacy and Chemistry. "Pancrepatine A. F. D." is stated to be "a combination of a Special Extract of the Pancreas and Hepatic Extract . . ." It is claimed that the oral administration of the preparation results in "reduction of glycemia" and "reduction and sometimes total disappearance of glycosuria." There is no convincing evidence to show that any preparation taken by mouth is an effective means of producing the char-

acteristic action of insulin. (Jour. A. M. A., March 3, 1928, p. 714.)

#### BiSoDol

The advertising of the "BiSoDol Company" states that BiSoDol is composed of "Bismuth Subnit-Magnes. Carb.-Sodium Bicarb.-Carica Papaya-Diastase-Ol. Menth-Pip" but contains no information in regard to the amount of each ingredient. The Council on Pharmacy and Chemistry has not examined the preparation nor has the A. M. A. Chemical Laboratory considered it worth while to analyze this "shotgun" mixture. (Jour. A. M. A., March 10, 1928, p. 793.)

# SOME POINTS IN THE TECHNIC OF PREOPERATIVE AND POSTOPERATIVE TREATMENT OF NON-MALIGNANT HYPERTROPHY OF THE PROSTATE\*

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ALL urologists recognize the necessity of a careful pre-operative treatment before prostatectomy, and consider this the most important step in the treatment of prostatic cases. It has reduced mortality following operation to about 3 per cent. A few surgeons have reported as many as two hundred consecutive operations for the relief of hypertrophy of the prostate with no mortality, and a recent study of these reports shows that these surgeons have every facility for carrying out thorough preoperative treatment before surgery is advised. Surgeons having such a low mortality rate must eliminate those patients who are poor surgical risks. A complete general physical survey is the only competent method of determining whether or not a patient is a poor operative risk. The small number of deaths that still occur following careful preparative treatment and prostatectomy is caused by the usual accidents that attend any major surgical procedure, together with certain factors which may be recognized before operation.

It is this group of cases that has occupied our attention in an attempt to further reduce mortality following prostatectomy. In our experience, a careful, thorough history and repeated physical surveys will discover many pathologic conditions which contraindicate operation in some instances, and in others indicate definite methods of procedure, which, if not followed, may result in the patient's death. In coöperation with other members of the staff of the Nicollet Clinic, we make an intensive study of each patient who may have to submit to prostatectomy. We have included in this paper certain phases of our study which have helped us in discovering conditions which might have been overlooked if the study were not comprehensive. We

have stressed certain other portions of our pre-operative technic which have helped us to discover physical conditions which were not obvious and which if undiscovered might produce mortality following operation.

## PREOPERATIVE TREATMENT

*Past History.*—From experience, we realize that a complete history is just as important in the diagnosis and treatment of hypertrophy of the prostate as in any other medical or surgical lesion. Frequently we have been able to map out a successful method of preoperative treatment which might not have been possible if the history had not indicated that possibly we were dealing with some condition other than hypertrophy of the prostate alone. In one instance, after much questioning, we found that a patient had had a vascular accident which produced a slight hemiplegia for a few hours. This history obviously assisted us in determining just what and how much preoperative treatment should be instituted. In another case, the history of a previous heart attack made it possible for us to discover with the electrocardiograph that the patient did have a heart lesion which we might otherwise have overlooked. A history of nervous exhaustion is important, because it indicates that the patient does not have a stable nervous system. A history of urinary difficulty beginning in the early forties should make one suspicious of some condition at the bladder neck other than non-malignant hypertrophy of the prostate, and should encourage the urologist to make a complete and thorough examination of the nervous system, including a spinal fluid test. The cause of a so-called cord bladder can be discovered if a thorough history is taken.

*Complete Physical Survey.*—Following the completion of the history, and after all facts obtainable are weighed and their significance determined, a complete physical survey is essen-

\*From the Department of Urology and Dermatology, The Nicollet Clinic, Minneapolis. Presented at the Fourth Annual Meeting of the North Central Branch of the American Urological Association, Madison, Wisconsin, Oct. 14 and 15, 1927.

tial. This survey should include every organ because, as with the history, data may be obtained which will assist the surgeon in determining the best method of preoperative treatment. Frequently the survey will show that the patient should not be considered a risk for operative treatment.

The examiner should pay particular attention to the heart and kidneys. Many patients have died unexpectedly as the result of preoperative treatment because the physical survey did not reveal a definitely damaged heart muscle which could not withstand the added work incident to decompression of the bladder. In the examination of the heart we find the electrocardiograph a necessary adjunct to our routine, since it frequently discloses a lesion which would otherwise not be found. Following the examination of the heart, the internist always advises therapy if necessary, which is started immediately under his direction.

Foci of infection should be searched for as carefully as in a case of arthritis. They may exaggerate the enlargement of the prostate because of prostatitis. Thus, it may be discovered that a heart condition is not entirely the result of urinary retention, but is secondary to chronic infection. Renal damage may be partially due to chronic infection, the result of removable foci. Foci of infection may also cause pyelonephritis to persist after operation.

After the physical survey has been completed and all pathologic conditions noted and removed, or treated when possible, we then turn our attention to renal function. Renal function damage is the most frequent lesion found with hypertrophy of the prostate. It may be the result of back pressure, or infection, or both. Complete blood studies for evidence of urea retention are important. These should be made before the patient has had a catheter passed and before the examination of the urinary tract, because, in some instances, following the removal of only an ounce of residual urine from an over-distended bladder, the blood chemistry findings indicate a sudden increase in the urea retained in the blood. Fifty per cent more urea may be present than was noted before catheterization or decompression. The amount of increase in the blood is usually the red flag which indicates to the urologist how carefully he must proceed with the preoperative treatment. A patient with a

blood urea of 100 and a creatinin of 5.5 should be treated very carefully, while an individual with two ounces of residual urine, whose blood chemistry is normal, obviously can receive more drastic treatment. The phenolsulphonphthalein or other dye test cannot be used satisfactorily before decompression is completed.

*X-Ray Examination.*—An *x-ray* examination will reveal the presence of a renal, ureteral or bladder stone. When the decompression has been completed, bladder diverticuli may be discovered by injecting a shadow-casting medium into the bladder. Unsuspected bladder malignancy may be found with the cystogram. Deformity of the bladder neck, produced by hypertrophy of the prostate, may be seen after the bladder has been filled with sodium iodide, and is sometimes of diagnostic value.

*Examination of the Urinary Tract.*—The surgeon should be very thorough in his examination of the urinary tract, since tumors of the kidney may be palpated when the history or the findings do not give a clue to their presence. In one or two instances we have found congenital conditions in both kidneys, not revealed by the *x-ray* or the history, which prevented us from doing a prostatectomy that would surely have resulted in the patient's death. In the presence of symptoms of prostatism, the surgeon should not deny the existence of hypertrophy of the prostate because the finger in the rectum reveals this organ to be flat or not enlarged. A patient may have a bilateral and median enlargement of the gland into the bladder and away from the rectum, so that the palpating finger feels little or no enlargement.

The residual urine test is important, but should be made very carefully and only after the blood chemistry findings have been reported. The removal of a small amount of residual urine as part of a diagnostic test for hypertrophy of the prostate has frequently precipitated uremia. The finding of residual urine in the early case, when the bladder has not been over-distended for a long period, is a useful test and produces no damage. In the absence of an enlargement of the prostate by rectal palpation, the finding of residual urine indicates some condition at the bladder neck which prevents the normal outflow of urine.

*Cystoscopy.*—In our opinion, every patient suffering with supposed hypertrophy of the prostate should have a cystoscopic examination.

However, we believe that this examination could be made only after complete decompression. Cystoscopy may reveal a complicating condition, diverticuli of the bladder, foreign bodies in the bladder and many conditions at the bladder neck which do not require major surgery. We have been much chagrined in two or three instances, on opening the bladder following careful preoperative treatment wherein the patient had a palpable prostate by rectum, to find a constricture at the bladder neck which would much better have been treated by means of the punch than some such minor procedure.

*Gradual Decompression with the Indwelling Catheter.*—We routinely practice the one-stage operation, using an indwelling catheter in preoperative treatment. In some instances we find it necessary to do a suprapubic drain when the urethral catheter does not accomplish the desired result in a reasonable length of time. Every patient who is to have his bladder decompressed should be in bed. The catheter should be passed through the urethra as gently as possible, by one experienced in this procedure. The patient should wear a suspensory bandage, and, if he will permit, double vasotomy should be done as soon as possible. This is not advisable before decompression is completed in patients who have high blood chemistry with large amounts of residual urine, because this simple operation, always done under a local anesthetic, is sometimes enough to precipitate an attack of uremia. The urethral catheter should be held in place by some means, preferably adhesive tape. A screw clamp can be used on the catheter, so that the decompression is intermittent, or the Van Zwalenburg method of continuous decompression may be used. Frequently, as mentioned above, there will be an increase in the blood urea and creatinin during the first two or three days of decompression.

When decompression of the bladder and kidneys is started, the patient should receive not less than 3,000 c.c. of fluid by mouth, by rectum, subcutaneously or by vein. Water is the best medication which a patient with urea retention can receive during this part of his treatment. We must sound a note of warning here, however, concerning the continued use of large quantities of water. In a number of instances we have found that this procedure has produced edema of the lower limbs, and in other instances we have

noted an embarrassment of the heart. We are certain that the continued ingestion of water over a long period of time causes fatigue of the kidneys. When the blood urea and creatinin are high, we are in the habit of giving at least 1,000 c.c. of physiological salt solution or water intravenously one or two times in twenty-four hours. In this manner we have been able to reduce the blood urea and creatinin very rapidly. When the patient is mentally dull and has some drying of the tongue, the intravenous method is the only sure means of introducing fluid into the general circulation. We constantly watch his tongue (which becomes dry quickly), the total output of urine, his mentality, and his ability to take food. In addition to the introduction of large quantities of water, we see that the bowels are evacuated at least once a day, which assists the kidney in eliminating urea and other waste products. During this part of the treatment, particularly with patients who show signs of approaching uremia, the heart action must be watched carefully by a competent cardiologist. We feel that the routine giving of digitalis has done harm in many cases. When patients are being decompressed we are very careful to see that they get sufficient rest; if they are nervous and irritable, and unable to get seven or eight hours' sleep out of every twenty-four, hypnotics are used, and if these are unsuccessful, opiates are given.

#### POSTOPERATIVE TREATMENT

During operation, particularly when drapes are removed and dressings applied to the wound, the patient must be covered with warm blankets or surrounded by hot water bottles, or some other means employed of conserving his heat. In our opinion, the careless exposure of elderly patients to cold and drafts during or immediately following operation contributes as much to the production of pneumonia as inhalation anesthesia. Many patients who have had only local anesthesia develop pneumonia, and we believe that in these instances the pneumonia is due to careless exposure in the operating room. We have learned from bitter experience that the patient who catches cold easily while in the hospital is a poor surgical risk. He has little resistance to the ordinary respiratory infections which are found in any hospital. Such a patient should be sent home with a permanent suprapubic catheter

until his resistance is re-established and should be operated only during warm weather.

Postoperative hemorrhage may be prevented by thoroughly infiltrating the prostate with novocaine before enucleation is started. We are in the habit of stitching the bladder mucosa edge following enucleation and tying all visible bleeders. In addition, we use the Pilcher bag to control hemorrhage. The patient is returned to a very warm bed and the administration of fluids by rectum is started at once. If he complains of pain, morphine is given liberally. The tension of the Pilcher bag is released after six hours and again after twelve hours. We use mercurochrome freely in the wound through the catheter and through the drainage tube. If there is no bleeding forty-eight hours after operation, all suprapubic drains, including the Pilcher bag, are removed. A catheter is gently pulled through the urethra to the bladder by means of the urethral tube of the Pilcher bag and is anchored. Gentle irrigation is used and mercurochrome is given through the catheter three times a day. The patient may get out of bed as soon as he wishes.

In our experience, the sloughing, stinking wounds which we used to encounter following suprapubic operations need not occur. We think

that mercurochrome has helped us to control this condition. Constant attention is necessary if the wound is to heal promptly. Catheters are adjusted so that there is little or no suprapubic leakage.

The most distressing complication which may arise following operation is epididymitis. Since we have advised vasotomy and have been particularly careful to control infection with mercurochrome, the number of cases of epididymitis in our series has been small. The intravenous injection of a solution containing 31 grains of sodium iodide has controlled the pain, temperature and swelling accompanying epididymitis within twenty-four hours in practically every instance.

We believe that further reduction in mortality in cases of enlargement of the prostate gland is impossible, unless every patient is carefully studied. The urologist must be able to appraise the physical condition of every patient correctly before operation, or he must have the close co-operation of other physicians who are trained to make a thorough physical survey. Data obtained from a complete physical survey often indicate that a patient who is apparently well has lesions which contraindicate operation.

1009 Nicollet Avenue.

#### THE KIRKPATRICK CONSUMPTION CURE FAKE

One George Kirkpatrick, an obscure veterinarian of Portland, Ore., exploits a quack consumption cure, "Pul-Bro-Tu." The mayor of Portland wrote a letter favorable to the preparation. The city council of Portland decided that a committee should be appointed to investigate the "cure" and the members of this committee were named by the mayor. The committee filed a report declaring unanimously that the Kirkpatrick nostrum was "without value in the treatment of tuberculosis and its use, as such, constitutes a menace." When the mayor testified before the committee, he declared, in effect, that his enthusiasm for Pul-Bro-Tu was based on the eulogistic reports he had received regarding the nostrum from Drs. Ralph C. Walker and Carl T. Ross. The committee brought out that Dr. Walker was a stockholder in the Kirkpatrick Remedies Company, and that both Dr. Walker and Dr. Ross profited through their tie-up with the Kirkpatrick outfit. (Jour. A. M. A., March 31, 1928, p. 1041.)

#### LUKOSINE NOT ACCEPTABLE FOR N. N. R.—II

Since publication of the report of the Council on Pharmacy and Chemistry on Lukosine the National Drug Co. has informed the Council that the quantitative formula for the preparation is given in its price list and in its "revised advertising." The latter contains the following formula: "Boric acid, 80.5 per cent; Alum, 9.2 per cent; Zinc Sulphate dried, 4.0 per cent; Zinc Phenolsulphate [Phenolsulphonate?], 2.0 per cent; Sodium Salicylate, 2.5 per cent; Phenol, 1.0 per cent, rendered pleasantly aromatic with a blend of Thyme, Peppermint, Eucalyptus and Methyl Salicylate. Each heaping teaspoonful contains 1/75 grain of Hydrastine White Alkaloid." In view of this the Council revises its statement by the omission of the word "semisecret" to read: "Lukosine is unacceptable for N. N. R. because it is a needlessly complex, and therefore irrational, mixture, marketed with a therapeutically suggestive name and with unwarranted therapeutic claims, in such a way as to lead to its indiscriminate and ill-advised use by the public." (Jour. A. M. A. August 13, 1927, p. 542.)

## THE DIAGNOSIS OF RENAL TUBERCULOSIS\*

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THE development of a tubercle is the same in all tissue whether it be in lung, gland, bone, meninges, or kidney. The tubercle is the tissue reaction to the Koch bacillus. Through the ingestion of food infected with the organism or through the inhalation of air laden with it, the bacilli enter the blood stream and wherever a clump settle there immediately follows a necrosis, accompanied by epithelioid and giant cell formation. The fate of the tubercle may be:

(1) encapsulated by fibrosing tissue, and thus cured; or (2) the necrosis proceeds to a liquefaction and cavity formation. In pulmonary tuberculosis where cure is relatively frequent and frankly acknowledged, it is due to the fibrosing process and where the patient succumbs it is because the liquefaction has gained the upper hand. Strange to say, the kidneys have not been so kindly treated by nature as the lungs, bones, or joints. The leading authorities such as Rovsing, Wildbolz, Israel, and Joly maintain that spontaneous cure of renal tuberculosis never takes place. Others, especially in recent years, argue to the contrary. Notably experimental work by Medlar, who industriously examined in serial section many kidneys from patients dying of pulmonary tuberculosis, tends to show that healed areas in these organs denote that there had been tuberculous infection present, and that these organs were cured by fibrosis. Thomas appears to have in his fairly large experience clinical evidence to substantiate such contention. They ask pointedly why should a tuberculosis cure be impossible in the kidney when it is absolutely proven in lungs, bones, and glands? The last word has not been spoken in this regard and so far as we can gather the problem resolves itself into this: given an infection with a weak strain of the Koch bacillus in a patient with marked resistance, and so situated that a proper regime for tuberculosis cure can be maintained, in such instance cure is probable; on the other hand where matters have progressed to the stage where there is marked cystitis, pyuria, and Koch bacilli

in the urine, it is likely that surgery offers the only cure.

### EFFECT OF AGE AND SEX

It is generally agreed that renal tuberculosis occurs mostly in the third and fourth decade. It is twice as frequent and more chronic in men than in women. Whereas the average lifetime of women with this disease is five and three-fourths years, men live only three and three-fourths

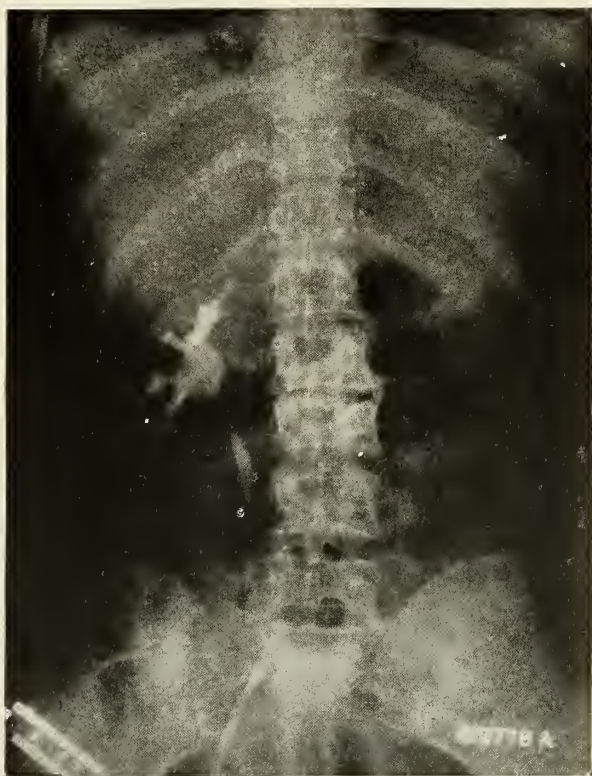


Fig. 1. Tuberculous right kidney with abscess near the tip of upper major calyx.

years. Also the immediate operative mortality is much higher in the male, being, according to some statistics, 9.5 per cent in men and 4 per cent in women.

### ASSOCIATED TUBERCULOSIS

It is considered that renal tuberculosis is usually one of several localizations of a tuberculous infection, and statistics show that in patients who suffer renal tuberculosis we can find tuberculosis

\*Read before the North Central Branch of the American Urological Association at Madison, Wisconsin, Oct. 15, 1927.

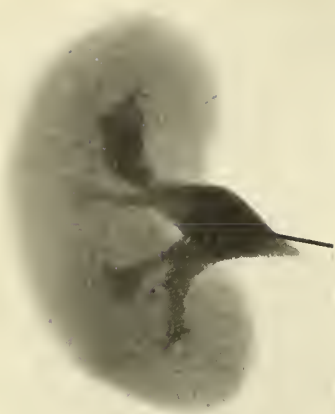


Fig. 2. Same kidney injected with 5 c.c. sodium iodide after extirpation.



Fig. 3. Same kidney injected with 10 c.c. sodium iodide.



Fig. 4. Same kidney injected with 15 c.c. sodium iodide. Note multiple large abscesses in parenchyma.

elsewhere in 71 per cent of cases. Braasch lists 300 cases in which upon careful clinical and roentgenological study 28 per cent were found to have pulmonary tuberculosis. In another series of 346 cases, 6 per cent had bone and 6 per cent gland involvement. Persson states that his material showed 22.4 per cent with pulmonary tuberculosis, 15.6 per cent with genital tuberculosis, and 7.1 per cent with bone and joint tuberculosis.

#### MANAGEMENT: MEDICAL OR SURGICAL?

The question in tuberculous kidney is whether the case should be handled surgically or medically. A review of the results by men having large experience shows that the cases handled without surgery usually end in disaster. Rafin reports 1 dead and only 77 alive in his series. Of 3 cases Wildbolz reports, 33.3 per cent dead in 1 year and 58 per cent dead in five years. Pe



Fig. 5. Tuberculous left kidney. Note dilated calyces and the moth-eaten appearance.



Fig. 6. Tuberculous left kidney. Note dilations of calyces, parenchymal abscesses, and numerous strictures of ureter due to tuberculous ureteritis.



Fig. 7. Right kidney from same patient, normal.

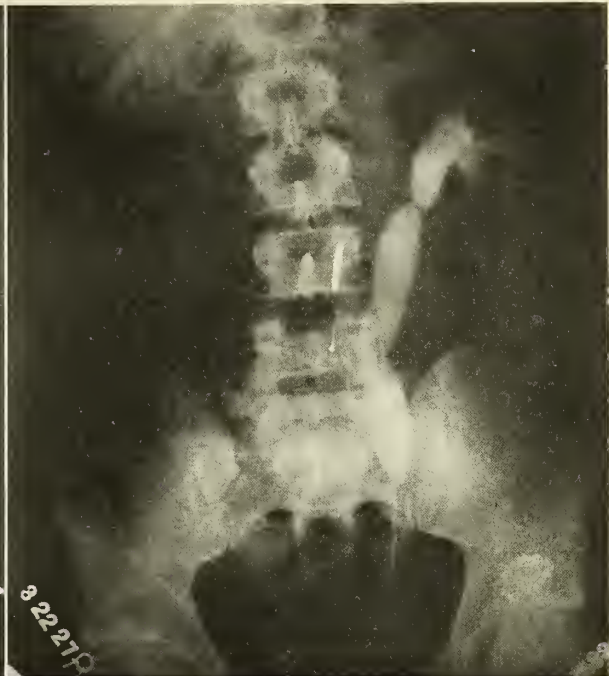


Fig. 8. Extreme dilatation of ureter with multiple strictures due to tuberculous left kidney.

on shows in his material 84.5 per cent of non-operated cases fatal, 63 per cent in the first year. On the other hand the cases submitted to surgery have to face first the immediate mortality, then the late mortality, and then persistent tuberculosis in spite of surgery.

Below are figures from some of the large clinics:

The Mayo Clinic lists 863 operative cases showing an immediate operative mortality of 2.7 per cent; Wildbolz, in 445 cases an immediate operative mortality of 2.4 per cent; Crabtree and Cabot 3.8 per cent; Kummer 7 per cent; Legueu and Chevassu 5.9 per cent in 1,539 cases; Boeckels 12.9 per cent in 2,289 cases; Persson 13.3 per cent; Israel 12.9 per cent in 1,623 cases.

The average of immediate operative mortality is 5 per cent; late mortality 15 per cent; patients with tuberculosis after operation 20 per cent; cured 60 per cent.

#### SYMPTOMS

Bladder irritability is one of the outstanding features of renal tuberculosis. It usually occurs early and is extremely resistant to medication. It is found as an early symptom in 74 per cent of the cases and develops later in an additional 18 per cent, making a total of 92 per cent. It is

evidenced by marked frequency of urination—more marked during the day than at night, and there is burning on urination with much pain. Blood frequently shows in the urine, 5 per cent of cases having gross hematuria and 68 per cent showing microscopic blood. Pyuria is encountered so often that it may be considered constant. With this pyuria a sterile urine is found



Fig. 9. Same case. Extirpated kidney injected with sodium iodide.

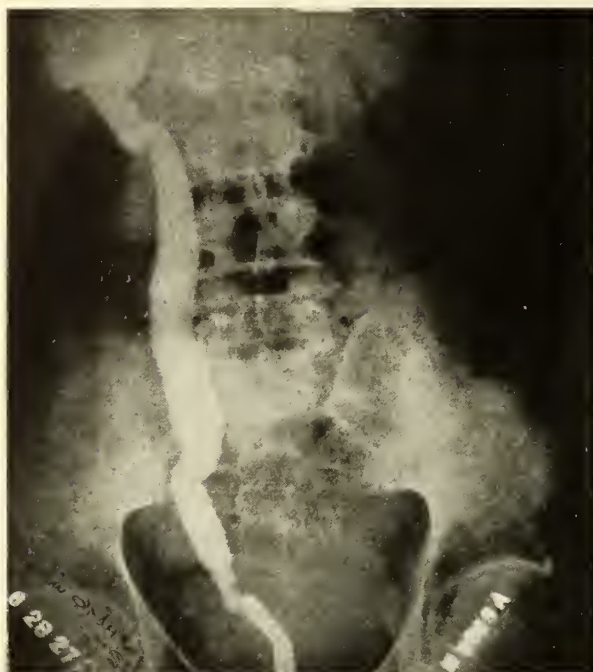


Fig. 10. Extreme dilatation of pelvis and ureter due to multiple tuberculous strictures of ureter. Right side.

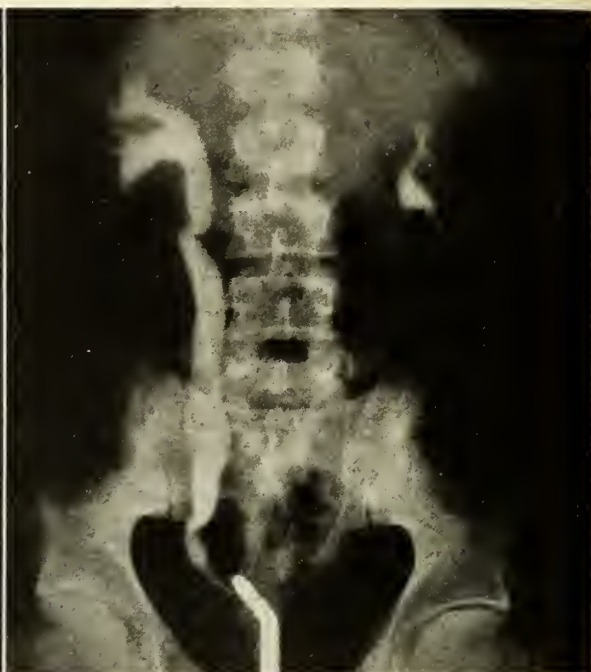


Fig. 11. Dilatation of ureter and pelvis probably not tuberculous.

and it is of general knowledge that marked pyuria with sterile urine indicates tuberculosis. Smears are positive in 78 per cent of all cases and guinea pig inoculations give an additional 7 per cent positive, making a total of 85 per cent.

A note or two on animal inoculation may be opportune. The test is extremely delicate and highly valuable. When urinary sediment is injected intraperitoneally or subcutaneously into a guinea pig the animal will develop tuberculosis. Lowenstein has shown this interesting experiment. He injected Koch bacilli into the foot of a guinea pig and an hour later amputated the foot. Nevertheless the animal developed tuberculosis. The question may well be raised whether this test is 100 per cent dependable. The answer is no. Braasch reports that out of forty-five kidneys which were proven tuberculous after extirpation, five, or 11 per cent, were negative to guinea pig inoculation. Furthermore, of his material which showed positive smear, 6 per cent were negative to guinea pig inoculation. To explain this contradictory evidence it is said that the inoculations may have been done at a time when the urine was free from the organism, or that there occurred promptly a fibrosis and encapsulation about the lesions, or that the animal had a singular immunity to the germ, or still

further that the organism may have been the avian type, in which case parrots rather than guinea pigs should be used. Whatever the cause, it remains true that 10 per cent of inoculations may be falsely negative.

#### CYSTOSCOPY

Cystoscopy is of extreme value in renal tuberculosis. The existent pathology in the bladder makes it extremely sensitive, at times necessitating caudal anesthesia. Inspection of the interior of the bladder reveals a mucosa highly injected, probably bleeding, markedly edematous, and covered in places with an overgrowth of mucosa presenting polypoid masses, not unlike papillomata. Usually one meatus shows this picture whereas the opposite is relatively normal. The bladder capacity is markedly reduced. Tubercles and ulcerations may be encountered and the bladder urine will of course yield the Koch bacillus.

#### PYELOGRAPHY

Renal tuberculosis can be for the main part diagnosed without pyelography. However, circumstances may be such that it is the only thing that will establish the diagnosis. Smears and animal inoculations may be negative, due to the patient being for the time free from Koch bacilli

showers; or the kidney may be a closed organ following complete occlusion of the ureter by stricture. So that in a certain percentage of cases pyelograms are necessary, and it may be added they are of extreme help. In the first place dilatation of pelvis and calyces is to be looked for. The change occurs first in the tips of the calyces, giving them a rounded and moth-eaten appearance. The degree of dilatation depends on the extent of the involvement of the pelvis and calyces. Should the disease become established in the parenchyma, abscesses will be found there, single or multiple, and of all sizes. Sooner or later each abscess gains entrance into a calyx and filling the pelvis brings out these cortical abscesses in a characteristic manner. Furthermore, as the tuberculous material passes down to the bladder, bacilli lodge in the wall of the ureter with a resulting tuberculous ureteritis and subsequent stricture formation. The strictures may be single or multiple and will of course show in the pyelogram as areas of constriction and dilatation.

#### AUTONEPHRECTOMY

Tuberculosis involving a kidney progresses to caseation and formation of a cavity which sooner or later finds an exit into the pelvis. This tuberculous material frequently sets up a tuberculous process in the walls of the ureter with ulcer and stricture formation. Thus the ureter becomes narrowed and at times complete occlusion results. Following this there is of course a cessation of infection reaching the bladder from the kidney above and the bladder may truly completely cure itself of its cystitis, with the disappearance of the frequency and the burning, the pyuria and bacilluria. In fact, many cases of this type have been advanced as spontaneous cure of tuberculous kidney as an argument against surgical intervention. In other words, closed kidneys have been exhibited as cured kidneys. That a closed kidney is not a cured kidney is well shown by the work of Braasch, who injected into guinea pigs emulsions from five such kidneys and found that one animal developed tuberculosis. What really happens after the closure of the ureter is that the caseation and liquefaction in the kidney continues until the entire organ is destroyed, leaving above the occlusion a dilated ureter full of pus with a huge sac of cheesy material in place of the kidney. This

remains ever as a liability to the patient in that it may infect with tuberculosis the good remaining kidney, or a perinephritic abscess may follow on the diseased side, to say nothing of the untoward effects of toxin absorption. It follows therefore that in autonephrectomy we are dealing with a closed kidney rather than a cured kidney and removal is the treatment of choice.



Fig. 12. Complete occlusion of ureter at the lower border of the sacrum following tuberculous ureteritis with multiple kidney abscesses.

#### CONCLUSIONS

1. Tuberculosis of the kidney is a blood-borne infection following ingestion of food contaminated with the Koch bacillus or following the inhalation of air laden with tuberculosis germs.
2. Medical cure may possibly occur in favorable circumstances but the majority of cases require nephrectomy.
3. The disease occurs for the most part in the third and fourth decade. Men are twice as often affected as women and the mortality in the male is much higher, due, no doubt, to the involvement of the genitalia in the male.

4. Although guinea pig inoculation may be falsely negative in 10 per cent of cases, the test is extremely valuable.

5. Cystoscopy shows a typical picture of congestion, edema, ulceration, and tubercle formation.

6. Smear 78 per cent and guinea pigs 7 per cent.

7. Autonephrectomy is a closed, but not cured, kidney. Danger from a perinephritic abscess and infection of the healthy kidney, as well

as toxin absorption, indicates the advisability of surgical removal.

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2. Crabtree and Cabot: The end-results of seventy cases of renal tuberculosis treated by nephrectomy. *Surg., Gyn. and Obst.*, xxi, 1915.
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#### PROPRIETARY PREPARATIONS AND PROPRIETARY NAMES

The rule of the Council on Pharmacy and Chemistry of the American Medical Association provides that, when a proprietary substance is admitted to the U. S. Pharmacopeia, it will be retained in New and Non-official Remedies only if the official name is given prominence on the labels and in the advertising. The justice of this rule concerning proprietary names cannot be questioned. It is in the interest of scientific medicine and medical progress. The history of Argyrol, which the Council has been obliged to omit from New and Non-official Remedies for conflict with this rule, is another example of the manner in which clinical evidence, none too carefully obtained, may boost a new remedy into popularity beyond its due. The promoter of a proprietary preparation, riding on the crest of a wave of popularity, is seldom willing to come down to the level of the quiet sea when the storm subsides. The Council has examined calmly and dispassionately the therapeutic claims made for Argyrol and has been unable to find evidence for some claims which it terms essentially misleading. Furthermore, the manufacturer is apparently unwilling to adopt the pharmacopeial synonym for it. The insistence on this synonym is important that physicians may fully comprehend the nature of the substance that they are using. The first duty of any one working in the field of medicine, be it investigator, teacher, physician or manufacturer, is to the public that is being served. This policy has been fundamental in compelling the omission of Argyrol. (*Jour. A. M. A.*, March 17, 1928, p. 855.)

#### ABRAMSISM ABROAD

The fantastic hokum of Albert Abrams is practically a dead issue in the United States. It has been relegated in this country to obvious fakers, some osteopaths, and the occasional physician who suffers from an itching palm or a lack of scientific balance. The Abrams fantastic hokum is now deluding the credulous in England, Canada and France. In Canada it has no support from the more responsible element of the medical profession. In France, the Abrams nonsense seems to be mainly boosted by one Régnauld. It is in England, however, that the E. R. A. has taken on its most amusing, or, should we say, its most tragic aspect. The chief exponent of the Abrams cult in the British Isles is Sir James Barr, who was once president of the British Medical Association. Sir James seems to have swallowed Abrams' theories hook, line and sinker. (*Jour. A. M. A.*, February 4, 1928, p. 401.)

#### EPINEPHRINE AND EPHEDRINE IN RELATION TO BLOOD PRESSURE

The action of ephedrine on the circulation is different from that of epinephrine. While the latter is a powerful heart stimulant, ephedrine is a direct depressant to the heart. A heart that has been depressed by continued low blood pressure is so sensitive to the depressant action of ephedrine that the poor condition of the circulation may be aggravated by it. It is also much feebler as a vasoconstrictor than is epinephrine. Hence, as a circulatory stimulant, ephedrine has been a disappointment. (*Jour. A. M. A.*, March 10, 1928, p. 791.)

## CARCINOMA OF THE COLON\*

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*Minneapolis*

BEING aware of the fact that from very limited material not much can be added to our present knowledge of the vast subject of cancer of the colon, I have consulted modern literature and have compared facts as they were represented in my cases.

Statistics tell us that most of such cancer appears in the ages between forty and sixty; however, we must realize that cancer of the colon exists in very young people, in the ages between twenty and thirty, and even earlier.

Public talks on cancer have educated the people of the present age as to cancer of various forms. So patients now come to medical men with these problems a great deal earlier than they did in the past. This progress has led to marked improvements in surgical results. Nevertheless it is doubtful if the laity can aid us in the early diagnosis of intestinal cancer.

What are the main symptoms that lead us to make a diagnosis of colon cancer? Obviously a case of intestinal obstruction must suggest to us the diagnosis of possible cancer. We should succeed, however, in making a diagnosis of a case of intestinal cancer previous to the state of obstruction, because this latter condition is not only much dreaded, but the operability of the obstructive tumor has at this stage become questionable. It is, therefore, to the early symptoms that we will have to give more significance, more importance.

A careful history must be taken. In the early stage of the disease the bowel shows a condition of irritation, marked by irregular movements, constipation at times alternating with diarrhea. If this condition becomes worse, a distinct abdominal discomfort becomes apparent. The question of bowel movements, as to diarrhea and constipation, must be elicited by the questioning physician. Intense questioning often brings out the fact that the stool has become gradually more constipated. No pain is mentioned as yet by the patient, but the movements are not giving complete satisfaction. The pa-

tient goes to stool repeatedly; he suffers from tenesmus of the bowels. (Anschuetz has reported a case of tenesmus of the bladder in colon cancer.) This condition leads to the symptoms of intestinal obstruction with its characteristic colicky pains.

Pain in the abdomen is often located in the right lower quadrant and not infrequently the picture of appendicitis is camouflaging the true ailment, as in one of our own cases. It is rather exceptional that the patient will locate the pain directly at the place of obstruction. It has been brought out years ago that pain caused by obstruction in the large intestine is below the horizontal navel line.

Loss of body weight is also to be taken into consideration together with other symptoms, but this is often not very marked. The picture of cachexia is not an early one in cancer of the colon, as it is, for instance, in cancer of the stomach.

Furthermore the history may bring out the fact that patient lost blood with the stool.

Alarmed by the facts brought out in the history we go over the patient and find, for instance, that his temperature is somewhat elevated, a condition which he never was aware of.

The abdomen is then percussed and palpated for the presence of a possible tumor, the one thing we have to look for. If this tumor is located in the hepatic or splenic flexure or in the sigmoid, the findings are practically always negative. Much depends upon the abdominal wall; if this is held rigidly then the tumor remains undiscovered wherever it is located, and the same can be said in an obese individual. Otherwise, such conditions excluded, a tumor in the cecum, transverse colon and even descending colon can ordinarily be discovered. It is most important that we make thorough palpatory examination with the patient in different positions. Even then a large tumor can at times be missed, as we found in a case involving the transverse colon, to be described later on. This latter phenomenon is probably best explained in our case by overlapping and filled small intestinal loops.

\*Read before the annual meeting of the Western Surgical Association, Omaha, Nebraska, Dec. 8 and 9, 1927.

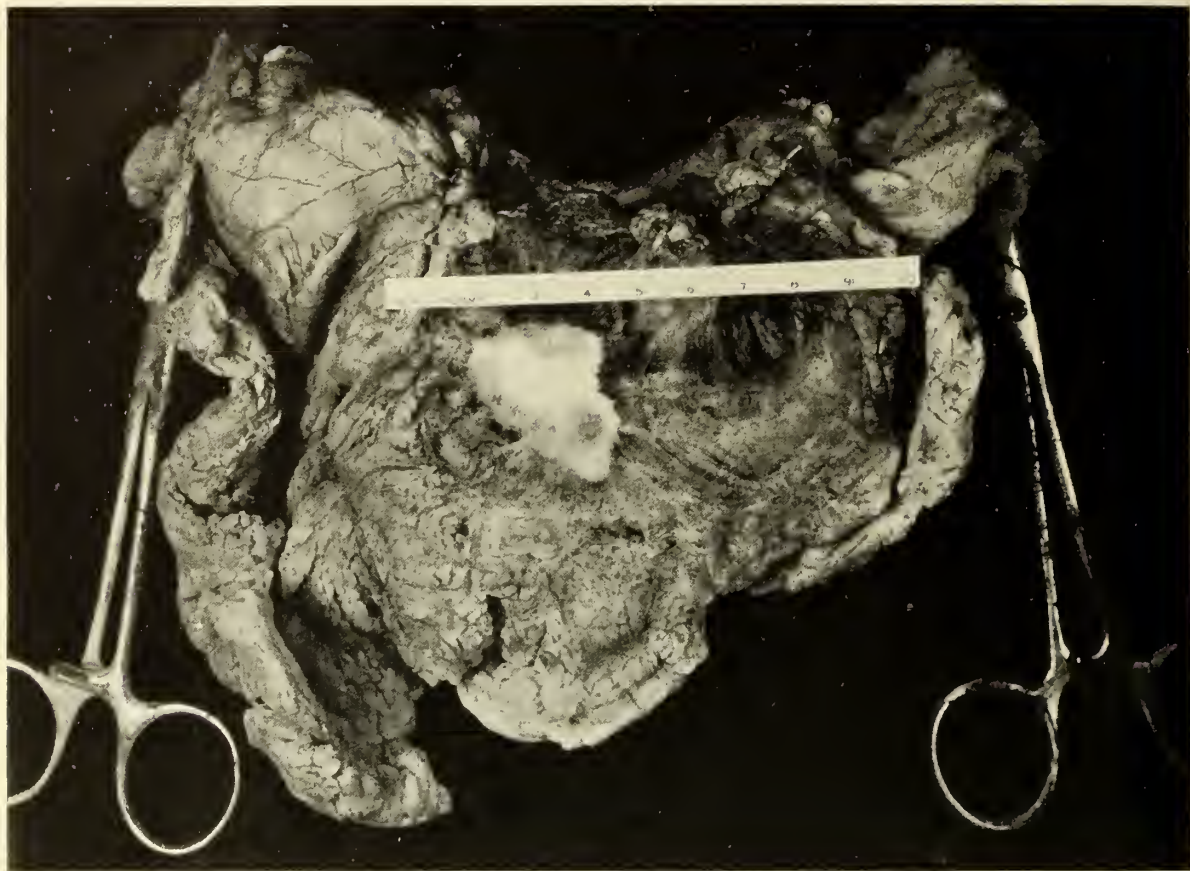


Fig. 1. Adenocarcinoma of the transverse colon (anterior view).

Not only is a digital examination of the rectum essential, but proctoscopy must be added, if the tumor is not otherwise detected. Moreover the microscopy of the stool is to be done for blood, pus and mucus. The benzidine test must be repeatedly done if first negative. It is only in very exceptional cases that we discover cancerous tissue in the stool.

A patient with colon cancer most often presents a marked anemia. It is characteristic that the proximal half of the colon, if affected by cancer, brings on pronounced anemia in contrast to that produced by cancer of the transverse, descending, and pelvic colon. I refer to an interesting article from the Rochester Clinic on such secondary anemia from cancer of the colon. It was brought out there that on account of the greater size of the cecum and the ascending colon, the tumor is here more extensive without causing symptoms of obstruction, and the larger tumors offer more surface for ulceration and consequent bleeding. When this ulceration is prevented by short-circuiting of the bowel with-

out resection of the tumor, the anemia improves markedly, at times vanishes entirely.

The final step in the search for colon cancer ought to be the examination by roentgen rays. It often makes a diagnosis or completes a diagnosis. But, should the first result be a negative one, have the examination repeated and insist upon the roentgenologist making the examination with a barium enema. In acute obstruction a barium meal is ill-advised. It may be allowed in cases of partial obstruction, and it always must be done where there is no obstruction.

We can only briefly refer to the differential diagnosis, excluding other diseases as tuberculosis, actinomycosis, hyperplastic conditions of the intestines, colitis of the various kinds, and especially diverticulitis. An illustration of an erroneous diagnosis is the following case:

A thirty-six year old housewife complained of pains in the stomach radiating toward the right lower side of abdomen, with flatulence but no vomiting or nausea. The heavy-set woman had some fever, an increased leukocyte count with 78 per cent hemoglobin. In the right side of abdomen above McBurney's point there

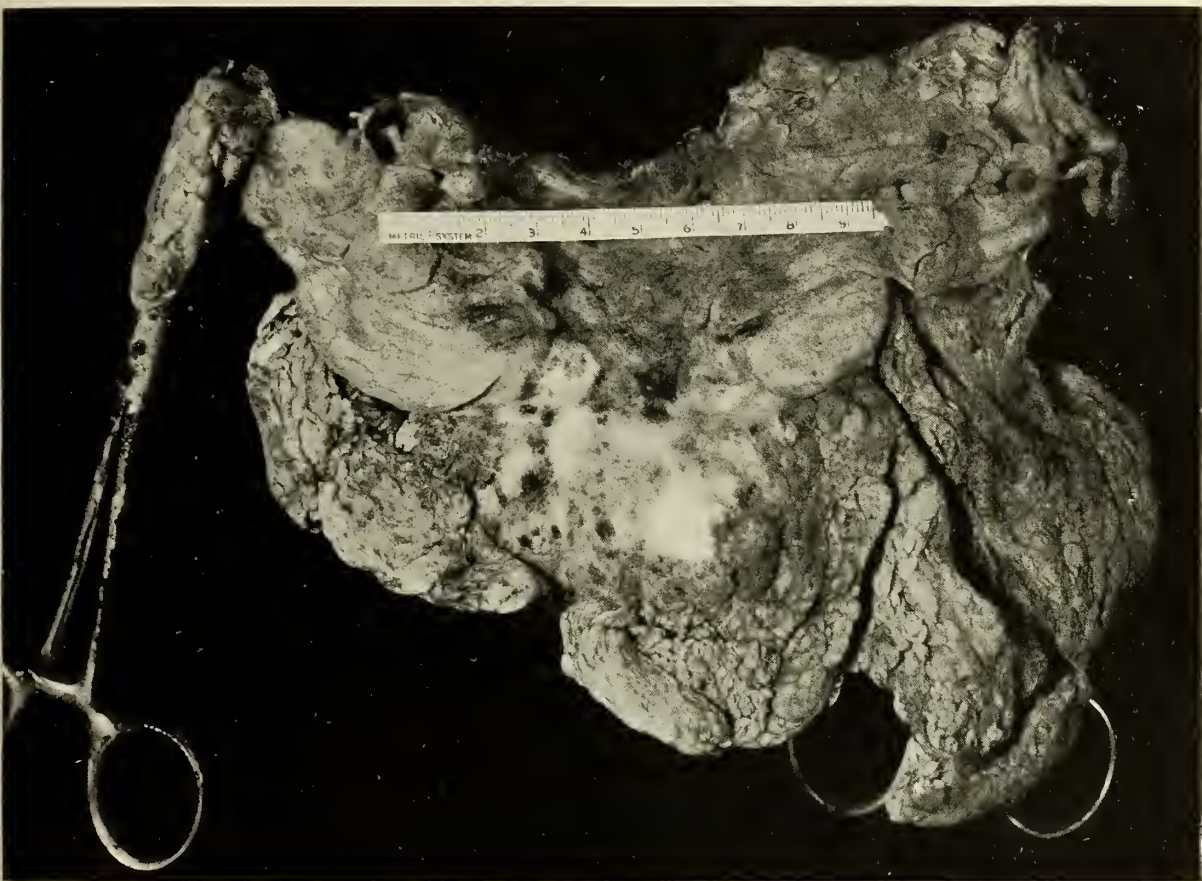


Fig. 2. Adenocarcinoma of the transverse colon (posterior view).

was a painful immovable resistance, the size of a child's palm. The *x*-ray examination was negative.

At operation we came onto a mass covered with omentum and adherent to some small intestinal loops. The tumor, not nodular, but hard, of the size of a small fist, was a part of the sigmoid. It was treated after Mikulicz with eventration and fixation to the abdominal wall, and a colostomy of the descending colon was added in the lumbar region without opening the gut then or later, as no symptoms of obstruction developed. After five days the tumor was removed with a cautery and as the posterior serosa suture was laid previously to the excision of the tumor the closure of the gut was very easily accomplished under local anesthesia in one session six months after removal of the tumor.

The specimen removed was 18 cm. long and proved to be (report of the pathologist) chronic ulcerative colitis. As far as we know the patient is living and well.

As surgery is the only treatment for cancer of the colon we may be permitted to bring out a few points of interest. The greatest step ahead in surgery of the colon has been done by Mikulicz who in the early nineties recommended eventration of the tumor and draining of the gut, thereby

reducing the formerly exceedingly high mortality. Today the results of resection of the colon for cancer still vary considerably, mostly on account of the condition of the patient, but also depending on the surgeon who handles the case.

I would like to quote from Moynihan's "Abdominal Surgery" the largest statistics by Okinzye (Cancer de l'intestine Paris, 1923), a series of 1,404 cases, excluding the rectum, where the cancers were equally distributed; a little over 40 per cent on the left side and the same on the right side, while in only 19 per cent was the transverse colon affected.

Irrespective of the location of the growth in the colon, an acute obstruction demands a colostomy or a cecostomy. An excision of the cancer is then done subsequently. In cases of the cecum involving the ascending colon or the hepatic flexure we remove the whole ascending colon and at least one-third of the transverse colon. The ileum is anastomosed with the transverse colon. I refer to the beautiful illustration of this operation by C. H. Mayo and W. H. Hendricks in



Fig. 3. Adenocarcinoma of the transverse colon (sagittal section).

the Annals of Surgery of March, 1926, where they show that a Murphy button can be used for the anastomosis and where the end of the transverse colon is brought into the wound and fastened there as a "safety valve."

Just as Kocher has shown us in the operation for resection of the stomach how to mobilize the duodenum, so has Moynihan taught us how to mobilize the large gut including the hepatic and splenic flexure; he has shown us that it is not as difficult to do as it might appear *prima vista*. "When carried out thoroughly," Moynihan states, "it results in the colon having as great freedom of movement as the small intestine."

A great deal has been written about end-to-end, end-to-side, and side-to-side anastomosis, but the men who have done the most in that line agree that it is not very important which method is followed.

The fact is sometimes forgotten that the wall of the colon is thinner than the wall of the small intestine. If obstruction exists, the wall of the distended gut is still thinner. It is easy, therefore, for the bacteria to find their way through. Knowing also that the colon is a regular hot-bed

for bacteria, the most exact asepsis is required in surgery here. Kocher already has drawn our attention to the fact that infection has been carried by the suturing material coming from within the gut toward the serosa, inviting peritonitis. Personally I know that Kocher never used any other suturing material for the gut than silk. This strongly convinces us that unabsorbable material like silk and linen should not be used in form of a continuous suture on the large gut.

Of cancer of the transverse colon Moynihan says: "The growth is as a rule small, and the glandular involvement limited to those lymphatic glands which lie upon or alongside of the bowel. For these reasons the resection need only be limited; a fair length can be removed, and an anastomosis made without tension."

We recently operated on a cancer of the transverse colon and I think it is of interest to report the case *in extenso*.

A thirty year old girl doing clerical work consulted us the first time in January, 1927, complaining of pains in the right lower quadrant of the abdomen and of recent constipation. She never was nauseated nor vomited. She never observed any blood in the stool. The patient looked pale and her hemoglobin was below



Fig. 4. Adenocarcinoma of the transverse colon (microscopical section—low power).

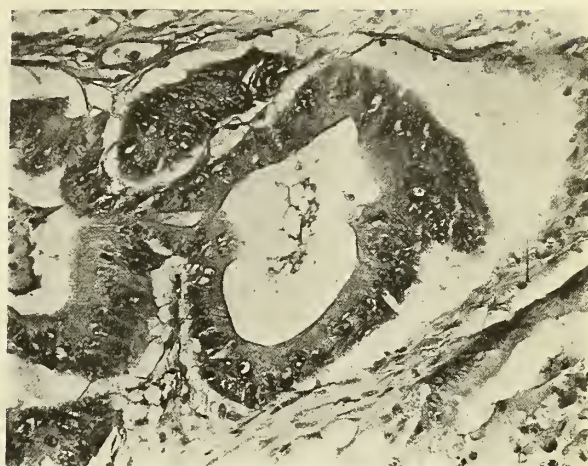


Fig. 5. Adenocarcinoma of the transverse colon (microscopical section—high power).

fifty per cent. The gastrointestinal examination by x-ray revealed a retrocecal appendix. This was removed and the patient soon returned to work feeling much better, stating later on that the pain in her abdomen had left her and that the bowels were moving regularly within the next three months.

In August, seven months after the appendectomy, she came to my office during my absence to see my associates. They, at that time, found a distinct mass around the navel, above and below it, well demarcated and movable, not painful to touch and with a smooth surface. As the patient did not know of any blood in her stool and as there was no colicky pain the doctors thought of a possible foreign body. No further operation was done until I returned in October, when the patient entered the hospital.

She looked very pale. Her hemoglobin was down to 38 per cent. She then stated that she had observed blood in the stool twice of late. At one time clear blood preceded the stool, but she never had any pain, never vomited nor felt nauseated. But she complained of a general malaise.

Percussion and palpation brought out a well demarcated tumor with irregular form, irregular hard edges, and a smooth surface, located directly in the region of the navel, more above but equally to the right and to the left, a tumor of the size of the palm of a large hand, movable in all directions, slightly sensitive to touch. Surgery was proposed. We excluded the possibility of a foreign body on account of the blood in the stool and made a diagnosis of malignancy, possibly a tumor of the omentum. The striking feature of this tumor was that at times it could not be detected by any of us while usually it was very large and very plain to the palpating hand.

A repeated gastrointestinal x-ray examination showed now a marked defect in the transverse colon and enabled us to definitely make the diagnosis of a malignant tumor of the transverse colon.

On October 11, 1927, we gave the patient 600 c.c. of citrated blood, which brought the hemoglobin up from

38 to 44 per cent. The patient was properly prepared. We incised the abdomen in the mid-line over the tumor and found the same free from adhesions, belonging to the transverse colon and being of unusual size. It was very movable, thus easily everted. It comprised the larger part of the transverse colon, equally to the right and to the left. We practically shaved off the tumor and the large omentum from the larger curvature of the stomach and with it we removed two enlarged glands situated in the ligamentum gastro-colicum. Then making certain that the suturing of the gut after removal of the tumor could be done without tension, we loosened the hepatic and splenic flexure manually a bit. The proximal and distal end of the colon, 10 to 11 centimeters away from the tumor, was then divided with cautery between the clamps and the tumor removed, and end-to-end anastomosis established. Two continuous catgut sutures united the lumina and four posterior and as many anterior interrupted linen sutures, about 1.75 cm. from the suture line, were added, thus avoiding tension on the first suture line.

The pathologist reported: "The tumor mass involving the transverse colon and the omentum is 10.5 cm. by 9 cm. and 6 cm. deep. It has anteriorly a smooth surface which is partially light colored and has a white pearly appearance. The tumor was sectioned sagittally and showed a roughly irregular cavity extending down from the lumen of the bowel from 3 to 3.5 cm. in width. The lumen of the bowel crosses the tumor transversely at the upper border. The normal mucosa has totally disappeared, the whole lumen being of the same type as the tumor cavity itself. The tumor cavity proper ends abruptly at the edge of the hard wall and a fairly normal mucosa lines the gut on either side. The tumor wall is from 2 to 4 cm. thick, is extremely hard, light in color, with a small amount of yellowish areas, grossly suggesting fat.

"The microscopic section taken from the lower posterior wall of the tumor shows a more degenerated fibrous stroma with some fat cells. Roughly cylindrical epithelial cells infiltrate irregularly everywhere the stro-

ma and have a marked tendency toward gland formation. At some points this attempted gland formation is very distinct, so that there is even secretion in the lumen; at other points it is not quite so complete. There are mitotic figures. At one side of the tissue there are numerous blood vessels and blood sinuses. One sinus has a partly purulent thrombus. The round cell infiltration is especially marked at this point.

"Diagnosis: adenocarcinoma."

The recovery of the patient was unusually undisturbed. She never vomited after the operation and had very little discomfort. Her abdomen remained flat and soft, and did not show the slightest degree of peritoneal irritation. For three days she received an abundant amount of saline solution under the skin and once glucose intravenously. Liquid nourishments were started and well tolerated four days after the operation. The wound healed by primary intention and the patient left the hospital in two weeks. When we saw her on November 14th her hemoglobin was 84 per cent and by December 1st she had gained twelve pounds.

The case is of special interest because:

1. The condition was camouflaged by a retrocecal appendicitis.
2. The symptoms of tenesmus and pains of all kinds were lacking.
3. The patient was a young person of only thirty years.
4. At times the tumor was not detectable by palpation in spite of its unusual size.
5. In spite of there being a large tumor, there were no adhesions to the parietal peritoneum or other viscera.

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#### DRUGS APPLIED THROUGH THE SKIN

Certain drugs are absorbed by the skin, others not. Non-volatile substances are not absorbed from aqueous solution. Such substances can be absorbed when applied to the skin in a fatty medium and with considerable friction. Bodies soluble in fat or fat solvents penetrate the skin more readily than water soluble substances. There is not great absorption, however, unless the substance is volatile. Volatile substances are much more readily absorbed through the skin and the degree of their absorbability is probably proportional to their volatility. (*Jour. A. M. A.*, February 11, 1928, p. 481.)

#### RELATIVE SAFETY OF SEDATIVE DRUGS

Sulphonmethane (sulphonal) and sulphonethylmethane (trional) have to a large extent been superseded by phenobarbital (luminal) and barbital (veronal), especially because the sulphonmethanes are apt to make the patient drowsy the day after the ingestion, and are liable to produce an alteration in the blood which manifests itself by hematoporphyrinuria. Barbital is a relatively safe but feeble hypnotic which may be preferred to all others when a mild effect suffices. Phenobarbital is a much more potent drug. It is safe when given in a dose of from 0.1 to 0.2 Gm. It is contraindicated in the presence of marked asthenia and in nephritis. (*Jour. A. M. A.*, March 10, 1928, p. 792.)

## OTITIC THROMBOPHLEBITIS\*

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OTITIC thrombophlebitis is usually caused by the hemolytic streptococcus: percentages in reported cases vary from seventy to one hundred.<sup>1,2,3,4,5,6</sup> Other organisms, such as the non-hemolytic streptococcus and staphylococcus albus, are occasionally found in the blood, but the hemolytic streptococcus predominates. Little is gained by bacteriological study of aural discharge on account of inevitable contamination; however, hemolytic streptococcus predominates here also. To be of value, cultures must be made at paracentesis; frequently this is impossible. The hemolytic streptococcus predominates in mastoid cultures, which are of value because they more closely represent the organism responsible for aural complications. Of sixty consecutive mastoidectomies I took such cultures in forty-one. Thirty-six and five-tenths per cent showed the hemolytic streptococcus, 9.75 per cent showed a non-hemolytic organism, 7.3 per cent showed the staphylococcus, 2.4 per cent showed the hemolytic streptococcus combined with the staphylococcus, 9.75 per cent an unclassified streptococcus, and 34.1 per cent were sterile.

Consideration of thrombophlebitis is simplified by remembering that three factors are involved: phlebitis, thrombosis, and septicemia, and that their development is influenced by certain anatomical facts. The position of the sinus with reference to the mastoid antrum has some bearing.<sup>7,8,9</sup> The mastoid process of a brachycephalic skull tends to be small, diploetic with thick cortex and superficial sinus far forward, protected by a thick sinus plate and separated from the antrum by a thin layer of bone. The sinus is near the antrum and is easily involved, either by contiguity or by thrombophlebitis of tributary veins, which often develops in this type of mastoid.<sup>2,3,4</sup> A dolichocephalic skull is apt to have a large, pneumatic mastoid with thin cortex, a sinus far back and deep, covered by a thin plate and separated from the antrum by a thick layer of bone. Such a mastoid is prone to de-

velop the coalescing type of disease, with perisinous abscess, but the situation of the sinus is a factor of safety.<sup>5,6,7,8,9</sup>

Infection may reach the interior of the sinus in different ways.<sup>10,11,12,13</sup> It may spread by contiguity from the mastoid cells, destroying the sinus plate, forming a perisinous abscess, attacking the dura, proceeding through the wall, and finally involving the intima, causing erosion and consequent thrombophlebitis by changes in blood chemistry and rate of circulation. Secondary lesions are uncommon and recovery is the usual outcome. Thrombophlebitis may also originate in smaller tributaries of the sigmoid, such as veins of the mastoid, the internal auditory vein, or lymph channels of the labyrinth, and progress until the great vessel is involved.<sup>14</sup> The blood stream and thrombus are infected from the beginning, the sinus wall secondarily, and metastases are early and serious.<sup>15</sup> Such cases are seen in patients presenting no external sign of mastoiditis and at operation a macroscopically normal wall.

Present surgical treatment of sinus thrombosis is the result of long continued trial, beginning with simple evacuation of the clot and including ultimately some type of obliterating operation on the vein. The position of this latter procedure in otology is settled, but the exact method of its accomplishment is an open question. There is still division of opinion as to the relative merits of ligation and excision. Consideration of this problem must take into account the duration of the disease, the pathology present, and the clinical condition of the patient.

In early cases the pathology has not advanced to the degree found in cases of long standing.<sup>16</sup> There may be a phlebitis of the sinus wall, or phlebitis and thrombosis which has not progressed far towards disintegration and contamination of the blood stream. The jugular may appear normal; if so, ligation meets the surgical indication. In a case seen late, the pathological process has advanced, phlebitis is more marked, the thrombus may have progressed toward disintegration and contamination of the blood stream,

\*Thesis presented before the Minnesota Academy of Medicine, Jan. 11, 1928.

and the jugular may be involved. The chances of metastasis are increased.<sup>17</sup> Otologists are divided in their judgment as to the treatment of such conditions. Many advocate ligation in all cases and there is reported a series of two hundred from the Massachusetts Eye and Ear Infirmary in which ligation alone was performed.<sup>18</sup> The advocates of this method point out that the operation is a quick procedure, produces less shock, does not open the neck to infection to any appreciable degree, leaves less scar, and produces just as good results as excision. It closes the largest venous avenue to the right heart and so permits safe operative interference on the sinus.<sup>19,20,21,22,23</sup> The Boston School of otologists ligates practically all cases of thrombophlebitis because the results equal those obtained by the more radical procedure.<sup>24</sup>

Against ligation certain arguments may be advanced. It does not block all the venous pathways to the right heart, and metastasis is theoretically possible, even after its performance.<sup>25</sup> Macewen<sup>27</sup> criticized ligation on these grounds and because it may cause reversal of current through the collateral circulation. Allport<sup>28</sup> made the statement that ligation was known to cause optic neuritis, edema of the brain, cerebral hemorrhage, and thrombosis of the other sinuses. Such cases are rarely reported in the literature. Practically all arguments against ligation are really arguments against jugular procedure of any sort, and apply equally well to excision.

Otologists who advise excision do so on the ground that the phlebitis always extends for a considerable distance below the thrombus and can not be delimited from the macroscopic appearance of the vein.<sup>29,30</sup> If this is true, excision must be from a point low in the neck to a point as high as possible, tying all tributaries and removing the vein in toto. The objections to this procedure are several.<sup>31</sup> The operation is more extensive, is productive of more shock, opens the neck to infection, leaves a bad scar, and often is not warranted.

Jugular intervention involves the question as to whether the sinus or the vein shall be attacked first. If the sinus is done first, infected particles from a disintegrating clot may enter the blood stream. If the jugular is ligated, with only partial obstruction above, it is theoretically possible for a reversal of collateral circulation to

occur.<sup>32</sup> This has but rarely been reported. Politzer<sup>33</sup> taught that the vein should be obliterated first, and Kerrisen,<sup>34</sup> in his latest textbook, states that it makes very little practical difference unless the patient is extremely septic, in which case ligation should be done first. This appears entirely logical.

The exact point of ligation is of interest. As stated previously, phlebitis always extends below the obvious involvement. In a series of two hundred cases in the Massachusetts Eye and Ear Infirmary only twice was ligation below the common facial vein necessary on account of thrombosis below that structure. Theoretically, in any case in which the jugular seems macroscopically normal the occlusion should be made above the common facial in order to prevent reversal of current through that structure and contamination of adjoining venous channels. Here again opinion is not unanimous and the statement has been made upon good authority<sup>35,36</sup> that ligation below the common facial is quite as effective; certainly it is simpler from a technical point of view. Personally, I prefer ligation above the entrance of the common facial vein, although it requires a little longer time.

If one studies statistics of results of these two procedures one is surprised to find but little difference. Koerner<sup>37</sup> reported 308 cases of sinus thrombosis treated by various methods. Cases treated by combined operation upon sinus and vein showed a mortality of 41.4 per cent and those treated without jugular surgery showed a mortality of 41.7. Jones,<sup>38</sup> in 1919, quoted fifty cases, thirty-five having the combined operation and showing a mortality of 14.3 per cent, and fifteen having no jugular surgery and showing a mortality of 13.3 per cent. It is hard to explain the equality of these figures unless it is due to the fact that the cases were treated upon widely varying indications. Crockett<sup>39</sup> reported a series of sixty cases of ligation showing a mortality of 16 per cent. Walker,<sup>40</sup> in 1921, reported a series of eighty-three uncomplicated cases of ligation with a mortality of 19 per cent, and Dench<sup>41</sup> in the same year reported a series of sixty-six cases of excision with a mortality of 28 per cent. These later figures probably more nearly represent the present results of these procedures. The more favorable figures for ligation may be due to early intervention by the men who practice that procedure; also possibly to

the fact that some cases were ligated which were not really cases of thrombosis.

I wish to present briefly the charts of four cases of otitic sepsis because they illustrate some of the problems presented by this disease.

The first case is that of a seven year old girl, upon whom I operated in another city, and whom I was not able to follow as closely as I should have liked. This case was probably complicated before the primary mastoid operation, this being indicated by a temperature of 103.5. The mastoidectomy was done May 9, and the first chill occurred May 12. Surgery was delayed awaiting the result of blood cultures. This was a mistake. At the combined operation May 15 the sinus, completely broken down and full of yellow pus, was opened, the wall was excised, and the lumen packed off. The jugular seemed normal at ligation. The patient ran a long, septic course due to a pulmonary complication caused by metastasis which probably occurred before ligation. Recovery was ultimately complete. This case of abscess of the sigmoid sinus, cured by the sinus operation, plus ligation, illustrates three points: the indication of intra-cranial complication based on high pre-operative temperature, the danger of waiting for blood culture reports when clinical signs of sepsis are fairly clear, and the added gravity of the prognosis after metastasis has occurred.

The second case is that of an eighteen year old girl, who probably had her complication, indicated by a temperature of 103.4 and severe headache, before the primary operation. At operation the plate over the sinus was found softened and adherent, and was removed, but the sigmoid did not present sufficient pathology to warrant its opening. The course of the disease not being controlled, exploratory exposure of the dura of the middle fossa was done four days later. The sinus wall was thick, elastic, and covered with an organized exudate. Six days after the primary operation, blood culture was reported positive for hemolytic streptococcus and ligation was done on an apparently normal vein. The sinus was incised and its lumen packed off, but the wall was not removed. The sepsis was promptly controlled. Just what pathology was present in this case was difficult to determine because the interior of the sinus was not well seen. It might have been a mural clot, a thrombosis of the jugular bulb, or simply a suppurative phlebitis of the sigmoid. This case is of interest because it illustrates again the gravity of high pre-operative temperature, the doubtful value of waiting for blood culture reports in the presence of definite signs of sepsis, and because it shows the prompt subsidence of sepsis after ligation.

The third case is a four year old girl with a chronic suppurative otitis media. Simple mastoidectomy was first done at which the sinus was not exposed. Sepsis developed during the post-operative course and a radical mastoidectomy was done at which the sinus was exposed and found apparently normal. Sepsis continued. The vein was finally ligated; the sinus was not opened. Sepsis promptly subsided and complete recovery ensued. The wisdom of ligating the vein without at the

same time obliterating the sinus is challenged by good authority<sup>42</sup> but this case did nicely. Here again the pathological process could not be definitely established. The sinus and vein appeared normal and blood cultures were negative. All we can say is that it was a case of otitic sepsis which was controlled by ligation. The sepsis may have been due to phlebitis, thrombosis, or thrombophlebitis of the sigmoid or its tributaries, the jugular bulb, or the jugular vein.

The last case is a chronic, suppurative otitis media in a twelve year old girl. The patient was not seen until late in the course of the disease; marked sepsis had been present for a number of days. There was choked disc of about 4 diopters and meningismus. Radical mastoidectomy was first done. The walls of the sinus were thick, gray and covered with granulation; the jugular vein showed marked phlebitis. The vein was ligated but the sinus was not opened because the operation could not be prolonged. The sepsis was not controlled and at the second operation the vein was removed and the sinus wall resected. Sepsis continued and at the third operation one-half inch of septic vein, all that could be reached, was taken out. The remaining stump presented marked phlebitis and contained a purulent thrombus. It was not anticipated that this procedure would benefit the patient but we were surprised at the prompt subsidence of sepsis and the rapidity of convalescence. Early blood cultures were negative, but late in the course of the disease a staphylococcus albus was recovered, probably a contamination.

This case, then, was one of abscess of the sigmoid sinus and jugular vein which required excision of the vein. It contains several points of interest. Advanced disease was found in a case seen late in its course and the surgery was more radical. Cultures were negative in spite of an advanced pathological process. A septic focus was taken care of by a child much debilitated by two weeks of sepsis, a fact which might be advanced in favor of ligation in such cases.

The position of jugular surgery in sigmoid sinus thrombophlebitis is established beyond question and the consensus of opinion is that it should be done first. The question which is still open is that of ligation versus excision. There are two schools of thought about this problem. One, exemplified notably by the men in Boston, maintains that simple ligation should be done very early, is sufficient for practically every case of thrombophlebitis, and presents great advantages over excision. The critics of this position hold that ligation is done too early and upon insufficient indication, thus obtaining figures which are too high for the real value of the procedure. An equally large and authoritative school uses ligation only in very early cases, when the diag-

nosis is doubtful, when the blood culture is negative, or when the patient is too septic to permit prolonged procedure. These men adopt excision for most cases because they feel it is necessary to eliminate the septic vein. One should not follow either method to the exclusion of the other. Ligation is sufficient when we are dealing with a case early in its course, the disease presumably not being far advanced, when the diagnosis is certain, when longer procedures are contraindicated, or when we find an apparently normal jugular vein. Excision should be used when the vein has become frankly involved below the common facial. A low ligation involves tying all the tributaries and this procedure is just as time consuming as excision and has not the additional advantage of removing the septic tissue. I believe, therefore, that ligation should be employed only when we can place a ligature about an apparently healthy vein above the common facial; excision should be used when the vein is manifestly involved below that point.

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## DIATHERMY AND PHYSICAL AGENTS IN GENERAL PRACTICE\*

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It has taken the medical profession thirty-seven years to show an appreciation of the possibilities of medical high-frequency currents," commented D'Arsonval, in a personal interview with this French savant with Kobak in 1924.

Gradually, slowly but surely has come an appreciation, not only of the use of electric currents in medicine, but of the entire subject of physical therapy. The fad and fancy stage of the subject has been passed. The false theory that its results are purely psychic has been outed and lived down, the subject has gone through a period of intense investigation since the war, and consequently much of the mysticism and many of the supposedly superhuman reactions caused by treatments with the varying modalities under this head have been explained and exposed.

Now that we know all the reactions are governed by the unalterable laws of physics and physiology it is not considered such a deep subject.

"The physical measures included under the term physical therapy are used only in an effort to convert an inadequate physiological reaction of the body into one that is adequate."

According to Titus,<sup>2</sup> three reactions in the use of physical forces can be brought about, and upon the actions of these results we depend in our effort to help the patient overcome the condition present. The three reactions that can be produced are formation of heat, where and to what degree we want, the effects of mechanical motion or exercise and some weak but potent chemical reactions.

That is all that physical therapy does: produce heat, produce more motion than the body itself is capable of exerting in certain locations, and produce chemical reactions sometimes of distinct benefit to the body.

To produce mechanical reactions, we have a very valuable method, and that is by massage and exercise. Had the medical profession years ago

not believed that massage was too unprofessional for them to direct or administer, we would not today have the foolish competition to our decent methods of treatments from chiropractors and other rubbing cults. They are making capital of the fact that massage and exercise can produce some results even though the members of these cults are too ill-informed to appreciate the indications and contraindications.

The other method of inducing mechanical effects is the use of static electricity. This is a current of extremely high voltage or pressure and low amperage or volume. It was the original electric current used for therapeutic purposes in medicine. Because of a more scientific understanding of the subject it is coming back into its own.

Regarding the chemical reactions that can be produced, our knowledge of the very beneficial effects that are obtained by the administration of ultra-violet light is almost daily increasing. One of the most potent effects is its influence upon phosphorus and calcium metabolism in the treatment of rickets and tetany. The chemical reactions induced by the galvanic current are extremely weak and have a limited field.

For the production of heat within the body there are available two extremely potent methods. By means of the radiant light from an incandescent bulb, heat can be made to penetrate the tissues to a depth of 1.5 inches as proven by Karl Sonne of the Finsen Medical Light Institute of Copenhagen. In many cases it is a very valuable substitute for diathermy. The other means of heat production is diathermy. Contrary to the usual understanding of the layman it is not an electrical phenomenon. Under proper treatment there is no shock. The heat is produced inductively, through the resistance of the part treated to the passage of the high frequency current; not conductively, as in the case of the hot water bottle, heating pad or cautery. Even where the diathermy current is pushed to the point of destruction of tissue, as in surgical treatment, the electrode remains cold.

\*Read before the annual meeting of the Southern Minnesota Medical Association, Austin, Minn., Sept. 30 and Oct. 1, 1927.

"Diathermy is probably the most common word used and best understood; but thermo-penetration is more expressive." By it we mean putting heat through or deep into the tissues. This is accomplished by means of the high frequency current. To produce this current, a machine is employed which steps up the ordinary lighting current first from 110 to several thousand, and the oscillations or alternations from the usual 120 or 60 cycles to many hundreds of thousands times per second. This type of current then is called also D'Arsonval, after a Frenchman who in about 1890 demonstrated that the main effect of this high frequency current in the body was the production of heat.

The insurance of the passage in parallel lines from one electrode to the other of the high frequency current is the voltage behind it. It is evident therefore that a machine wound to give a high milliamperage and relatively low voltage will have less ability to overcome resistance and consequently less power of deep tissue penetration than one constructed to deliver a much higher voltage with less milliamperage. In all other electrical currents, except the static, the electrical lines of force do not go in straight lines through the tissues from electrode to electrode, but are diffused in widely scattered ones, and are only concentrated at the points of contact of the electrodes. Hence it necessarily follows that the deeper structures are much less under the influence of the electrical current.

Diathermy may be divided into medical and surgical. The latter will not be considered in this paper.

Medical diathermy may be divided into direct and indirect. Autocondensation is the most important example of the latter.

Diathermy, then, as we shall use the term, is true converse heat, that is, heat generated within the tissues; hence it penetrates deeply and to a great degree uniformly.

The methods of application of direct diathermy may be briefly mentioned as the lateral, double cuff, and cuff and water.

Materials usually used for electrodes are 22 gauge block tin, and mesh. The dosage used is from 50 to 100 milliamperes per square inch on the smallest electrode. The duration of treatment varies. Frequency of treatment depends upon the underlying pathology.

Pedersen<sup>3</sup> says the physiological results are more important than meter indications or those of the thermometer.

The contra-indications to diathermy are two.

1. Pus without drainage.

Quoting from Pedersen,<sup>4</sup> "Where there is pus, evacuation is one of the insurmountable rules of surgery and in physical therapy great caution must be exercised unless there is an outlet for the pus as the solvent action begins; otherwise probably dangerous absorption is instituted. Probably the success of diathermy in pneumonia rests on the principle that as soon as the current begins to soften the consolidation, evacuation of the inflammatory product begins and is carried on by expectoration. In general even small quantities of pus had best be left to incision by the surgeon before the application of physical measures, except, perhaps, radiant light, which does not pass through and through the accumulation."

2. Lesions where there is a likelihood of hemorrhage, as for instance in gastric ulcer.

#### THE APPLICATION OF DIATHERMIA

Let us consider the effect of physical heat upon chemical reactions in general. Every degree of heat up to a certain point will hasten the chemical reaction, as can easily be proven by numerous laboratory experiments. The digestive action of normal enzymes is hastened by each degree of heat added, up to a physiological limit. Considering the reactions of nature's protective enzymes and antibodies that are normally found in the blood to be chemical in nature, therefore, heat to a physiological degree, applied in the proper place to activate these enzymes, would naturally have a beneficial effect by hastening and increasing their activity. Heat up to a certain degree above body temperature will activate phagocytes and increase the opsonic index.

Heat applied to contractile tissues will produce relaxation; applied to arterioles and capillaries it produces a dilatation of these vessels and causes arterial hyperemia. Heat, being sedative in nature, will relieve pain when applied directly to the diseased tissue cells, whether pain be caused by toxin or mechanical injury to the body cells. A constructive nutritive arterial hyperemia is instituted in contradistinction to the vena static hyperemia of Bier.

Nature alone may succeed by her own method of combating infection and resolve most of the fibrosis following acute inflammation; and some of it, in chronic inflammation. If our original

premise is correct the increased enzymatic action of the blood is the factor which accomplishes the resolution of beginning fibrosis in acute inflammation as well as in old chronic fibrosis.

Another possible effect of diathermy, or any heat above 110° F., on many bacterial cells is attenuation. The germ is made less virulent to the body tissues and less able to resist the solvent action of the greatly activated normal enzymes and antibodies of the blood. Thus diathermy increases the resistance of the body tissues against infection, while at the same time lowering the vitality of the germ, hindering it in its fight for supremacy.

It is not intended to give the impression that good therapy should exclude any scientific method of treatment. Adjuvants should never be neglected. Physical therapy should be included as a valuable assistant to any and all good measures. If the salicylates alone will enter the blood and serve their purpose in the inflamed joint of acute articular rheumatism without any other aid than that given by nature, how much better work can they do if they are forced through that joint in much greater quantity by quickly establishing an intense arterial hyperemia in the diseased area, by the use of diathermia? By the foregoing I wish to convey the idea that physical therapy and diathermia is an aid to rational drug treatment.

One of the specific reasons why surgery superceded therapeutics and almost elbowed it out of the arena was the superior accuracy of method and clean cut results of the one as compared with the relatively uncertain, hit-or-miss character of the other. Medicine fired grape shot from a blunderbuss; surgery performed accurate target practice with a carefully sighted rifle. Is it any wonder that the profession and the public turned impatiently from the vagueness of the one to the decision of the other?

While it is true that physical therapy, in its various modalities, constitutes, in a sense, a special form of treatment, and its technical development is necessarily in the hands of a few men, yet it is not, and must not be regarded as, a specialty of medicine in the sense that ophthalmology, or urology, or similar branches of medicine, are specialties. It is a mode of therapy or use in every department of medical practice in which, and to the extent to which, it is applicable.

There is not a physician in the entire profession, from the general practitioner to the most exclusive specialist in the most specialized branch of medicine or surgery, but should be interested in physical therapy, and will find it an important (and ultimately indispensable) aid in the cure and relief of his patients.

If it be agreed that physical therapy is but an integral part of the physician's practice, it follows as an inescapable corollary that no physician's equipment is complete without a knowledge of physical therapy and the means of applying it to the treatment of proper cases. The recognition of its proportionate place in medicine, moreover, does not preclude an equal recognition of the fact that there are conditions, unamenable to other forms of medicine and surgery, in which physical therapy has already been shown to give excellent results, and undoubtedly more and more such conditions will be brought to light as it is developed.

By way of clinical application I wish to point out a few conditions where physical therapy may be considered to be the only means of giving benefit to those afflicted.

In the field of gastro-enterology for instance, there is an apparent change in the viewpoint of surgeons regarding the advisability of operative procedures in certain abdominal affections. This change is due to the ever increasing number of cases in which symptoms persist, or are aggravated, or new ones appear after operation.

Some of the conditions following under this head are gastric and pyloric ulcers, chronic cholecystitis, adhesions about the cecum, diagnosed and operated upon for chronic appendicitis. When necessary, to physical therapy must be added proper diet, and drugs for more immediate relief of the symptoms and to secure comfort to the patient.

Speaking of end-results in surgery, Secor<sup>5</sup> says "that it is not in technic that more perfect end-results are to be obtained, but in possibly more detailed preoperative study, and a more intelligent and painstaking after-treatment."

Many of the cases coming to surgery have tried various physicians and sundry cults. They are sick in mind as well as body; they have sick habits; they think sick thoughts. To simply perform an operation on this class of patients and turn them loose will produce perfect end-results in very few cases.

It is natural for sick people to want something done for them; they like personal contact, the touch of the hand, the use of head light, etc., anything that gives the suggestion of action, that the physician is really doing something. Anything that will intensify the effect of therapeutic suggestions will aid in securing better end-results.

A great many physicians and surgeons have taken it for granted that psychic effect is the Alpha and Omega of physio-therapeutic efficiency, expressing themselves on physical therapy in general as a "lot of bunk."

Numerous instances could be cited from the literature of men like Ochsner, of Chicago, becoming enthusiastic over the improvement in wound healing under the simple incandescent light.

In general abdominal conditions that offer themselves for physical therapy may be stated to be any case that does not require immediate surgical intervention. Acute pus conditions, indurated ulcers, frequent or severe gallstone or appendicitis attacks are cases that are strictly surgical. Chronic conditions such as gastric and duodenal ulcers, perigastritis, periduodenitis, chronic cholecystitis with or without adhesions, adhesions about the cecum, pelvic adhesions, chronic salpingitis and post-operative adhesions about the gallbladder regions, stomach, cecum, colon or pelvis, result in a host of patients referred to as the "chronic incurables." They hound the physician constantly and are frequently the only black spots in an otherwise successful practice.

The incurable cannot be cured of course. However, the definition of "incurable" is oftentimes based only on hygienic, dietetic and drug methods. What may be incurable under these circumstances may become curable under a rational combination of measures.

With the advent of physical therapy splendid results have been and are obtainable in these cases. Also by the use of physical therapy in these cases there is built up in the minds of the laity a feeling of confidence in the conscientious physician, a feeling that we all know has been slipping as the result of not only poor results obtained by treatment either medical or surgical alone, but also of propaganda by the non-medical cults.

In the type of cases just cited it is of course absolutely essential to obtain as accurate a diagnosis as possible, and only when the diagnosis is established as well as it is possible to make it, is the time to institute proper treatment by physical therapy.

A good rule is, "No diagnosis, no treatment."

In reading the report of the Medical Defense Committee of the North Dakota State Medical Association,<sup>6</sup> it was noted that, of the twenty-eight cases pending against doctors, twelve had to deal with fractures. This high percentage of fracture cases in the courts indicates that the public is far from satisfied with the results of the treatment in this class of cases.

It may be that the cause of dissatisfaction lies largely in the after-treatment, which in general may be said to be suffering from insufficient attention of the doctor, who is mostly interested in reduction of the fracture and willing to take a gambler's chance on the functional end-result.

Many very able books on fractures have been published, but the few notes they contain on the after-treatment are usually misleading and hazy to say the least.

It is not our purpose to give a dissertation on the treatment of fractures, but in giving a short résumé of the physiology in the healing of a fracture, based on the most recent experimental work on bone repair, to show how the application of physical means may be synchronized with chronological bone repair.

What happens when a fracture takes place and how the repair may be aided is best discussed under five headings.

1. There is hemorrhage immediately following a fracture, which is central, subperiosteal and muscular and may extend along fascia and subcutaneous tissue. The hemorrhage produces symptoms of pain, swelling and muscular spasm. This indicates clearly nature's attempt at immobilization and, after the best possible reduction has been accomplished, our efforts should be to maintain this reduction by effective, but not constricting, immobilization.

2. Within a few hours after the fracture, a productive inflammatory process begins which, through the granulation tissue formed and the exudate of fibrin and serum, changes the hemorrhages into a hematoma. The clinical symptoms of pain, swelling and muscular spasm per-

sist, which tells up to keep hands off and maintain immobilization.

3. Forty-eight to seventy-two hours after reduction the blood clot surrounding the fragments is further organized by connective tissue growing in from the periphery. Osteoblasts appear on the stage and some bone matrix is formed from the intracellular substance. By this time, the pain and spasm have disappeared and the swelling has decreased.

4. On the fourth or fifth day, there is a soft callus consisting of osteoid tissue. The calcium salts (phosphates and carbonates) are deposited in the connective tissue stroma of the perivascular areas. The salts are carried in the circulation by colloids and carbon dioxide and are also available from the fractured ends of the bone by a process of demineralization and atrophy.

The calcium salts are in solution in an acid medium. It is therefore believed that the hydrogen-ion concentration becomes lowered, and, when this reaches a certain point below that of the blood plasma, precipitation of the calcium salts occurs. If at this stage the splinting permits, it is easy to see how the application of heat will help to restore the condition of the soft parts about the fracture. The physiological action of heat, however, will also tend to lower the hydrogen-ion concentration of the blood and, therefore, is helpful in the precipitation of calcium salts.

5. Between the second and third weeks, the connective tissue is well organized and new blood vessels are seen. Osteoid tissue appears in the perivascular areas and there is a gradual transition in the appearance of the cells from connective tissue to osteoid tissue to bone.

The absorption of excessive callus begins and there are signs of re-establishment of the bone marrow. It is at this stage that the patient complains of stiffness in the contiguous joints and the soft parts about the fracture are described as being without life. The fracture may be said to be convalescing, where the bone repair has gone on to soft callus and there is no muscular spasm, swelling or pain which contraindicates manipulation.

By using the foregoing as a criterion for after-treatment, it seems rational to fix the end of the second week after reduction as the beginning of after-treatment.

Gentle massage of the soft parts above and below the fracture is of great value, but any massage over the callus is no help and may produce excessive callus and myositis ossificans. It is not difficult to conceive how massage may dislodge osteoblasts and spread them into the soft tissue and accelerate their growth or increase the transition of connective tissue cells or muscle cells into bone-producing cells.

Sir Robert Jones<sup>7</sup> gives the main physiological effects of massage:

1. Assisting the circulation.
2. Aiding the movement of lymph.
3. Exerting tension on some structures which we hope to free or stretch.

Championniere,<sup>8</sup> in the study of crushed tissues after the application of massage, found histological evidence that: (1) the muscle appeared normal; (2) no secondary fibrous bands separated the muscle fibers; (3) no fibrous thickening around the blood vessels; (4) the general bulk of the muscle was greater; and (5) no signs of hemorrhage, in contrast to dissociation of the muscle fibers and evidence of signs as given under 2, 3, 4 and 5.

The use of heat may be externally by means of radiant light which produces rays in the red end of the spectrum which are capable of considerable penetration. When these rays strike the body, there is an increase of surface temperature. To protect against excessive increase, the heat-regulating mechanism responds with a hyperemia. The capillaries are dilated, heart action is increased, and the circulation accelerated. Heat is carried into the systemic circulation and some is eliminated through more rapid respiration. The sweat glands increase their activity and begin to eliminate and there is a tendency to keep the body temperature at a constant level. The muscles relax because of the sedative effect of the heat on the sensory nerve endings, and its action reflexly on the deeper structures.

The other means of heat production is diathermia. By means of intradermal injections of normal saline, Hansson and Birrell<sup>9</sup> determined that in normal individuals without treatment it required sixty minutes to absorb two minims of the solution. Such an area exposed to radiant light reduced the time to thirty minutes. Diathermia gave approximately the same results, and massage reduced the time to ten minutes.

Where the fracture involves or is near a joint, so-called therapeutic exercises are also indicated, which may be divided into active, that is, voluntary contractions of muscles by the patient; passive, where exercises are performed on the patient by means of an apparatus or a technician; and resistive, performed by a technician in co-operation with the patient.

In closing I may say that the successful practitioner holds fast to two cardinal facts.

1. He knows he must get results with his sick patients by taking advantage of every means to accomplish his object.

2. He knows he must impress his patient with the fact that he is doing something for him.

Physical therapy provides the physician with the third unit of the triad, medicine, surgery and physical therapy. As in medicine and surgery, to accomplish results it requires the fine senses of the physician and the utmost potentiality of his brain in becoming acquainted with the patient and his disease, so that he can make correct diagnosis and proper selection of cases. There is also necessary a knowledge not only of the choice

and technic of the modality proper for these cases but also a knowledge of the pathology of the condition we are attempting to treat. We must not fall into the error of thinking that we can press a button, turn on a current and cure every ill to which human flesh is heir.

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#### VITAMINS A AND D IN COD LIVER OIL

Accumulated evidence seems to have established the fact that vitamin A is not identical with the antirachitic factor; as a consequence, vitamin D has been postulated. Work has been published which shows that some cod liver oils, rich in vitamin A were poor in vitamin D and that others rich in vitamin D were poor in vitamin A. The importance of this matter may be appreciated when it is pointed out that some commercial firms whose products have a satisfactory vitamin A content claim, *ipso facto*, a satisfactory content of the antirachitic factor vitamin D. The Council on Pharmacy and Chemistry has previously attacked this fallacy. In the new section on Vitamin Foods to appear in the chapter on Medicinal Food in New and Non-official Remedies, 1928, the Council states that it does not feel justified in requiring any specific test or standard of antirachitic potency, but it announces the policy of encouraging manufacturers to adopt and publish such methods of testing as will enable them to guarantee a vitamin D potency for their products. For products admitted to New and Non-official Remedies the Council permits no claim of vitamin potency unless it is backed up by adequate tests for the kind of potency claimed. (Jour. A. M. A., March 10, 1928, p. 770.)

#### SANATOLOGY "THE ONLY SCIENCE OF HEALTH"

"Sanatology" is a new cult. In 1927, Percival Lemon Clark went before a committee of the Legislature of Illinois in behalf of "House Bills Nos. 296, 297 and 411." These bills were for the purpose of getting legal recognition of the cult, Sanatology. Dr. Clark has advertised through newspapers and by radio. He sums up his attainments, thus: "I cure the sick, cure the desperately sick, cure asthma, cure rheumatism, cure hay fever, cure goiter, and all the rest of the 'incurable' diseases." Dr. Clark's merchandise accessories comprise such products as "Dr. Clark's Dextrinized Wheat Health School Bran," "Cereal Bran," "Cracked Wheat," "Steel Cut Oatmeal" and "Dr. Clark's Cooked Whole Wheat." Then there is a "Sanatology Blower"; the "Sanatological Enema Bag and Attachments"; the "Sanatological Oil" and the "Health School Laxative Tablet." Dr. Clark's *magnum opus* is "How to Live and Eat for Health," which is a book of 240 pages, devoted mainly to Dr. Clark's peculiar theories, dietetic and medicinal, and incidentally to advertising Percival Lemon Clark and the Health School. (Jour. A. M. A., March 31, 1928, p. 1060.)

# CASE REPORTS

## TOXEMIA OF PREGNANCY: A COMPARISON OF TWO DISSIMILAR CASES\*

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*Case 1.*—M. E., aged 24, was admitted for the second time to the Minneapolis General Hospital on November 3, 1927. Prior to her first admittance in January, 1926, her past history had been negative except for measles at the age of 14.

On the first admission, there was a generalized anasarca, a blood pressure of 186/130, with four plus albumin but no casts. The blood creatinine was 1.62 mg. per 100 c.c. blood, the urea 24.5 mg., and the non-protein nitrogen 45.2 mg. Eliminative treatment was used and a spontaneous abortion of a three months fetus resulted in a marked improvement. At the time of discharge, the blood pressure was 164/100 and there was a trace of albumin in the urine.

On the day of her second admittance, the patient showed a pregnancy of 26 weeks, the last menstrual period being April 15, 1927, and the date of expected confinement January 22, 1928. She had had no prenatal care, or any observation between her first and second pregnancy. Her chief complaints on admission were headache, blurred vision, and a generalized edema.

Physical examination showed a young female with a marked pallor of the face, marked edema of the face and puffiness about the eyes so extensive as to almost close the lids. There was also an edema of the entire body, especially marked in the lower extremities, where deep pitting on pressure was present. The pupils were equal and reacted to light, the teeth were in poor condition, there being four carious upper teeth that needed extraction; tonsils were atrophic and buried; the thyroid was not enlarged. The breasts showed the usual signs of pregnancy. The heart and lungs were essentially negative. The fundus of the uterus was palpable two finger breadths above the umbilicus and the fetal heart was heard in the right lower quadrant, regular, with a rate of 160. The pelvic measurements were normal. Vaginal examination showed an undilated cervix lying high in the pelvis. There was an acute endocervicitis with marked purulent discharge.

The pupils were dilated and the fundi examined. Both fundi showed numerous areas of whitish exudates, areas of hemorrhages, and marked edema and swelling of the retina. This was diagnosed as an albuminuric retinitis.

The blood pressure on admittance was 252/174. The urine showed a specific gravity of 1.011, albumin four plus, and many red and white blood cells. A quantitative Esbach's estimation showed six grams of albumin

per liter. The Wassermann reaction was negative.

Two hours after admission, the patient had a convulsion lasting two minutes, followed by a period of coma; this was followed by another convulsion one hour later. It was deemed advisable to terminate the pregnancy at this time. Under nitrous oxide-ethylene anesthesia, the cervix was sufficiently dilated to permit the introduction of a number three Vorhees bag. The bag remained in the uterus for seventeen hours, during which time she had two more convulsions. One and one-half hours after the expulsion of the bag a spontaneous delivery of a stillborn fetus of about



Fig. 1. Albuminary retinitis. Fundus of right eye, 1 month after delivery. Edema and swelling of disc. Areas of exudation and hemorrhages.

twenty-six weeks gestation occurred. There was no maceration. The fetus presented by the breech. The placenta was complete, there being several small areas of whitish infarcts present.

During the time the bag was in situ, the Stroganoff treatment was used with alternate doses of morphine and chloral hydrate sufficient to force the respirations down to 8-10 per minute. The pulse during this time varied between 120 and 160 per minute. Adjuvant treatment consisted of a gastric lavage and colonic irrigation with glucose and soda bicarbonate solution to promote elimination. Fifteen minutes after delivery the blood pressure dropped to 210/150 and forty-five minutes after delivery it had dropped to 170/130. The patient's general condition was fairly good and the prognosis favorable at this time.

The accompanying charts show the blood pressure

\*From the Obstetrical Service of Dr. F. L. Adair at the Minneapolis General Hospital.

curve and the urinary findings with the output and intake of fluids during the month following delivery. There was a complication during the first ten days postpartum of an acute bilateral pyosalpingitis with large adnexal masses palpable as high as the umbilicus. The temperature varied between 101 and 103° for one week and the pulse 130-150 during this time. The vaginal smears were positive for gonorrhea. During this period it was necessary to catheterize every six

a period of coma. This convulsion was again repeated on the following day, lasting only a few minutes.

During the remainder of the second month postpartum, the convalescence was undisturbed and recovery rapid. The urine during this time contained from two to four plus albumin and occasional casts. Quantitative estimations varied between 0.45 gms. and 1.75 gms. of albumin per liter. Daily 24 hour specimens of urine showed a fixation of specific gravity ranging between 1.006-1.015. The blood pressure varied between 154/130 to 176/134; the temperature was entirely normal; and the pulse averaged 80-90.

At the end of the ninth week after delivery, the patient was up and about, on a salt-free low protein diet. The four carious teeth had been extracted, the condition of the fundi had further cleared up and the general condition was good.

This case is of interest for several reasons:

1. A definite toxemia occurring in the same patient in her first two pregnancies.
2. The early termination of pregnancy, the first time spontaneously at three months and the second time artificially at six and one half months.
3. The marked similarity of the findings in the two pregnancies.
4. The presence of a definite chronic glomerulonephritis rather than the usual type of nephrosis, encountered in these conditions.
5. The probability that the present condition was an acute exacerbation of a chronic nephritis and that the convulsions were due to a uremic condition rather than eclampsia.
6. The permanent injuries to the eyes and kidneys

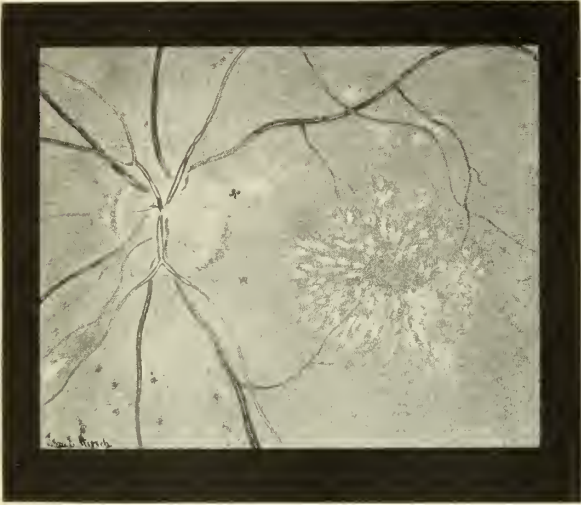


Fig. 2. Albuminuric retinitis. Fundus of left eye, 1 month after delivery. Swelling and edema of disc with surrounding exudation. Typical star-shaped figure at macula.

hours. From the tenth day on the patient's temperature reached normal limits, the pulse gradually falling to 90, and improvement was rapid. The adnexal masses gradually disappeared from abdominal palpation.

At the end of one month postpartum, the hemoglobin was 70 per cent and the R.B.C. 3,440,000, the lowest findings having been hemoglobin 40 per cent and R.B.C. 1,930,000. A P.S.P. test for kidney function at this time showed 45 per cent of the dye excreted in the first hour and 24 per cent excreted in the second hour, a total of 69 per cent.

The eye grounds at this time still showed evidences of recent hemorrhages, whitish spots of exudation which were slowly absorbing, and a few spots of hyaline degeneration. There was also some swelling and edema of the retina with a definite elevation of the vessels at the disc margin. The condition of the fundi was definitely improved since the first examination. The accompanying drawings show the condition of both fundi at one month postpartum.

During the sixth week postpartum there was a change in the patient's condition characterized by upper abdominal pain with nausea and vomiting persisting for a few days. Examination at this time showed tenderness and muscular rigidity over the right upper quadrant, no enlargement of the spleen or liver, and a slight icteric tint to the skin. The blood pressure rose to 190/130 and the patient suddenly went into a typical convulsion lasting a few minutes and followed by

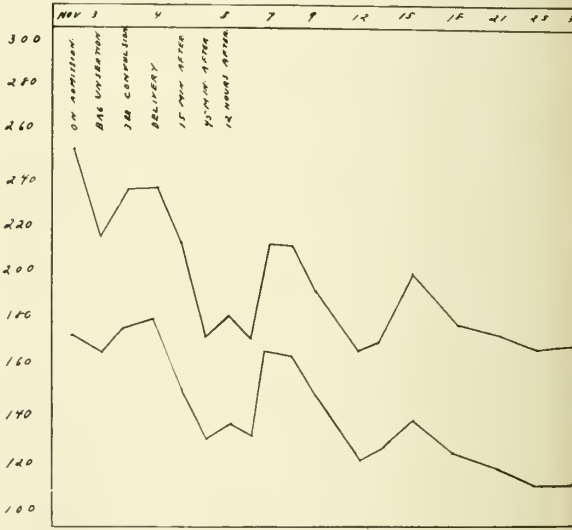


Chart I. Blood pressure curve of Case 1.

and the inadvisability of this patient ever becoming pregnant again.

Case 2.—G. P., aged 39, a primipara, was admitted to the General Hospital on December 16, 1927. She had had scarlet fever, measles, and pertussis during childhood and an operation for appendicitis and right cystic

	Nov. 3	5	8	11	14	17	21	24	28	Dec. 2
Intake (Fluid)	300 c.c.	735 c.c.	1060 c.c.	1000 c.c.	2000 c.c.	1800 c.c.	2200 c.c.	1850 c.c.	800 c.c.	1250 c.c.
Output (Urine)	250 c.c.	1050 c.c.	1485 c.c.	1500 c.c.	2975 c.c.	3100 c.c.	2550 c.c.	1450 c.c.	1100 c.c.	1025 c.c.
Albumin (Qualitative) Urine	+++++	+++++	++	++	+++++	+	+	++	++++	++
Albumin (Quantitative) Urine	6 grams		6.4 grams	.245 gms.		.28 gms.				
R.B.C. in Urine	+++++	+++	+++++	++	++++	+				
Blood Creatinine							1.75 mg.			
Blood Urea		22.6 mg.	22 mg.				16.3 mg.			
Blood Uric Acid		6.14 mg.		6.3 mg.			2.1 mg.			
Van Slyke			48%							

Chart II. Urinary and blood findings—output and intake—Case I.

ovary in 1915. The last menstrual period was June 13, 1927; quickening occurred November 8th; the date of expected confinement was March 20, 1928. The patient had been under prenatal care for six weeks. The course was normal until a few days before admission, when a sudden rise of blood pressure to 170/120 and

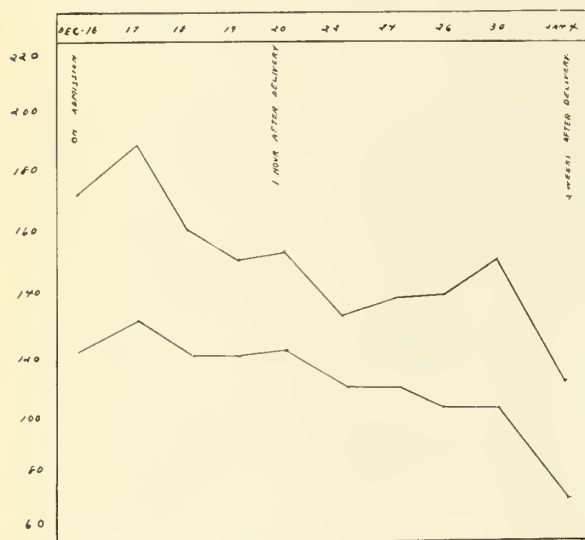


Chart III. Blood pressure curve of Case 2.

a four plus albumin content of the urine was discovered.

The chief complaints on admission were severe occipital and frontal headache, dizziness, blurred vision, weakness, severe epigastric pain, nausea, pains in the chest, dyspnea, orthopnea, and a non-productive cough. Physical examination showed a middle aged female, acutely ill, suffering from hyperpnea and epigastric pain. The head and neck were negative, the heart was normal except for a tachycardia, the pulse ranging from 130 to 150. The lungs showed a marked degree of pulmonary edema with dullness and moist râles at both bases, reaching to the fourth dorsal vertebra posteriorly on either side. The abdomen showed a gestation of about six months; the fetal heart could be heard. The lower extremities showed only a very slight edema. Examination of the eye grounds showed no changes in the fundi.

The blood pressure on admission was 172/122, rising 24 hours later to 186/130. The urine showed a specific gravity of 1.050, four plus albumin and many hyaline casts. Quantitative estimation showed 19 grams of albumin per liter; the urine boiled solid on qualitative estimations. The total output of urine in the first twenty-four hours was only 300 c.c. The hemoglobin was 100 per cent; R.B.C. 4,670,000; W.B.C. 16,050 and the Wassermann was negative. The urea nitrogen was 15.9 mgs. per 100 c.c. blood, and the Van Slyke estimation 45 per cent.

At the end of twenty-four hours after admission the patient's condition seemed worse. In the face of a rising blood pressure, an increasing pulmonary edema and increasing pulse rate, and the marked albumin

content of the urine, it was decided to induce labor. There had been no convulsions at any time.

Under ether anesthesia the cervix was dilated sufficiently to admit a No. 3 Voorhees bag. The bag was expelled 62 hours later, at which time the cervix was dilated four fingers. Delivery of a stillborn premature infant was then completed by podalic version and extraction.

Recovery was rapid after delivery, the blood pressure dropping to 136/104 two days later; the pulmonary edema rapidly subsided; the pulse rate dropped; the albumin content of the urine subsided to 1 gram per liter by the third day, and the specific gravity of the urine dropped to 1.009. The highest reading of the albumin content occurred during the second day following the insertion of the bag, at which time it was 20.8 gms. per liter.

At the time of discharge, two weeks after delivery, the headaches, epigastric pain and distress and pulmonary edema had entirely subsided. The only complaint at this time was a slight dizziness. The blood pressure had fallen to 110/64 and there was only a very faint trace of albumin in the urine. Convalescence had been entirely afebrile and free from infection, and recovery was complete.

This case is of interest for the following reasons:

1. All the symptoms and signs of the case are typical of a severe eclampsia, terminating in complete recovery.
2. There were no convulsions.
3. The kidney lesion was the true temporary type of nephrosis which occurs in the pre-eclamptic and eclamptic toxemia of pregnancy.

#### SUMMARY

A toxemia of pregnancy was presumably present in each of these two cases. The first case can be classified as an acute exacerbation of a chronic glomerulonephritis during pregnancy and complicated by convulsions. The second case is a true eclampsia of pregnancy with nephrosis but without convulsions.

## STREPTOCOCCUS INFECTION OF PENIS

### REPORT OF CASE

EDWARD BRATRUD, M.D., F.A.C.S.  
Warren, Minnesota

C. S., aged 18, referred by Dr. O. of Hallock, Minnesota.

Family history and previous history unimportant.

*Present Complaint*—Eleven days ago while shocking barley, experienced a sudden sharp pain in penis, but patient went on with his work until four or five days later, when he noticed a slight discomfort. Six days after incident, he had considerable pain in the penis and on examination noticed a slight discharge. Pain and discomfort gradually became worse so he had to quit work and on the seventh day consulted a doctor. He was hospitalized under rest treatment with hot packs. Swelling of the penis and general discomfort grew progressively worse until, the eleventh day following injury,

the patient was referred for diagnosis and treatment. He had had increasing difficulty in voiding for past 48 hours.

*Examination*—The patient is a well developed and fairly well nourished adult male, pale and extremely septic, almost moribund in appearance and in very great pain. Body weight 136. Blood pressure 130-70. Pulse 116. Temperature 103. W.B.C. 25,000 with 82% P. M. N's.

*Examination of Penis*—The member is unusually large, boggy, swollen and slightly tender, measuring 10.5 inches in length by 5 inches in diameter at its thickest portion, with the most prominent swelling in the distal half ventro-laterally. A brawny edema involves the scrotum and spreads over the pubes. The bladder is greatly distended. A slight urethral discharge of light viscid character contains a few gram positive diplococci and very occasional streptococci and staphylococci.

Immediate operation was deemed advisable. Under gas anesthesia a perineal urethrotomy was performed and 2900 c.c. of clear urine was released from a distended bladder with a No. 28 French catheter.

Urethroscopy revealed the maximum induration 5.5

inches back of the meatus, and incision of the indurated area through the urethroscope released about 90 c.c. of foul pus. A counter opening was made in the penis ventro-laterally and continuous tube drainage was made through this and the urethral meatus.

The postoperative condition was fair. Involved areas were covered by massive hot moist bichloride packs. Immediate blood transfusion was followed in two hours by glucose saline intravenously, with a minimum of 4500 c.c. of fluids subcutaneously and intravenously every twenty-four hours for the first two days. Swelling gradually subsided and the drainage tube was removed on the fourth day. Drainage ceased completely on the ninth day.

The urethrotomy tube was removed on the tenth day. Further convalescence was uneventful. The patient was discharged on the fourteenth day following operation, voiding nicely, and the urethra dilated to 30 French.

Cultures showed pure short-chained streptococci. Blood cultures were negative. No evidence of the barley beard at any time.

Examination three weeks later showed the condition excellent. The urethra dilated easily to 32 French.

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## President's Letter

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IT IS important that the County Societies elect delegates to the State meeting who will be present and properly represent them. This meeting will be an important one. There will be many problems coming up for discussion. Officers will be elected and plans will be discussed for the coming year. In addition to the meeting of the House of Delegates, there will be clinics at the Minneapolis Hospitals given by prominent men in our profession throughout the country, on Monday and Tuesday. Wednesday, Thursday and Friday we can all attend the scientific sections of the A. M. A.

There will be no scientific program for the State Association this year. This seemed like a wise decision on the part of the House of Delegates because it would be impossible to arouse interest in another scientific meeting this spring, and in the fall we have the Northern and Southern Minnesota meetings, which are quite enough. It seemed much better to give them our support and a large attendance than to attempt a meeting of the State Association.

The omission of the scientific program will save the State Association \$1,200. Part of this money is to be spent in entertaining the House of Delegates of the A. M. A. at a dinner Monday night, June 11, at the Nicollet Hotel. This will give our delegates an opportunity to meet members of the Associations of every state, and to hear inspiring talks from the leaders in our profession.

The State Medical Association and the Hennepin County Medical Society are joint hosts of the A. M. A. Our responsibility is almost entirely social, as the A. M. A. takes care of its own scientific program. Every member should come if possible, bring his automobile along and show strangers the beauty of the Twin Cities and the surrounding country. Invite them home with you after the meeting, and show them the wonderful recreational possibilities of Minnesota. We want every visiting doctor to carry away with him an unforgetably agreeable memory of this meeting.

*C. B. Wright*

# EDITORIAL

## MINNESOTA MEDICINE

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Vol. XI May, 1928 No. 5

### The A. M. A. Meeting

Minneapolis is to be host for the seventy-ninth annual session of the American Medical Association in June. Fifteen years ago the Association met in Minneapolis and the chances are that another fifteen years will elapse before the profession of the state will again have an opportunity to attend the national meeting within our gates. Seeing and hearing men of national reputation is in itself an inspiration and the later reading of the published papers will take on a new interest.

The A. M. A. assembly is the largest medical convention in the world and, although the western meetings are not so large as the eastern, the attendance runs well up into the thousands.

Every Minnesota physician should avail himself of this unusual opportunity.

The meeting officially opens on Monday, June 11, with the convening of the House of Delegates at 10 A. M. in the ball room of the Nicollet Hotel. Minnesota has three representatives—Drs. Rothrock, Litzenberg and Burnap. Registration opens at 8:30 A. M., Monday, June 11. Clinics have been arranged for Monday and Tuesday to be conducted by some of the visiting men who are outstanding in the various specialties. The general meeting Tuesday evening constitutes the opening exercises of the Scientific Assembly, to be followed Wednesday, Thursday and Friday by the various sectional meetings.

The entire space allotted for scientific and commercial exhibits has long ago been taken. The commercial exhibit promises to be even larger than the one last year at Washington. The scientific exhibit, a comparatively recent addition to the program, will be distributed over the various specialties and promises to be most instructive. Dr. E. T. Bell is chairman of a local committee in charge of a fresh pathology exhibit. Dr. F. L. Adair will head a committee which will present a special exhibit on the subject of gonorrhea in women. A series of demonstrations of the newer laboratory methods will be put on for the benefit of general practitioners and the committee on fractures has arranged for an extensive exhibit on methods and appliances for this branch of practice.

A word to the wise is sufficient.

### The State Medical Association

The Minnesota State Medical Association is to hold no scientific meeting this year. This fact should not detract from the interest in the meeting of the State House of Delegates which will be held at the time of the A. M. A. convention in Minneapolis in June. Each year important matters, for the most part committee reports, are brought before the House, and this year will prove no exception.

Considerable recent interest has been manifest in several matters which will be the subject of

committee reports. It is generally felt that some constructive measure should be taken, for instance, regarding contract practice in general. It is felt in some quarters that insurance work is being awarded on the basis of a low fee schedule rather than high professional qualifications.

How far the organized profession should go in so-called educating the public is a question which has not been fully settled in Minnesota, and in fact may never be finally settled. The question is probably more one of publicity than actual education. Your attention is called to the committee announcement which appears in this issue.

Next year, too, will doubtless furnish new legislative problems which will require committee activity.

The statute of limitations after being reduced to two years in North Dakota by one legislature was later changed back to six years by the next legislature. From this we may gather what to expect in Minnesota not only next year but at each legislative session.

It is important that every component society appoint and instruct its delegates and that each delegate realize his responsibility and see to it that his society is represented.

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### Standardization

In 1921 Mr. Hoover established a unit in the Department of Commerce, of which he is secretary, called the Division of Simplified Practice. Its purpose is the simplification in the manufacture, distribution and consumption of commodities in general. The use of a needless variety of shapes and sizes of commodities is an extravagance, not only in production but in distribution, replacement and even in consumption; and the public ultimately pays the bill.

The department renders its assistance and approval whenever 80 per cent of the manufacturers and consumers agree upon desirable specifications. The stipulations are recommended and published in pamphlet form by the Government printing office, but are in no way obligatory. Provision is made for revision yearly by standing committees representing manufacturers, distributors and consumers.

Largely through the efforts of the Committee on Simplification and Standardization of the American Hospital Association, of which Miss

Margaret Rogers, superintendent of St. Luke's Hospital, Saint Paul, is chairman, hospital beds, china, and, according to a recent bulletin, hospital bedding, have now been standardized by the Washington Bureau. The saving to hospitals throughout the country simply in these few items will amount to thousands of dollars. Other hospital supplies such as hospital plumbing fixtures, clinical thermometers, surgical dressings, etc., will probably be added in the near future.

Germany has been one of the leaders in the simplification through standardization of commodities in general. It has been said on good authority that her standardization methods developed before the World War did much towards enabling her to continue the war as long as she did.

On the other hand it is well recognized that extravagance has characterized the management of American enterprise in general—undoubtedly because heretofore certain economies were not so essential. As our country reaches out for world markets, however, every sort of economy will have to be practiced.

As is to be expected standardization in German hospitals has been far ahead of that in our country. There is little in a German hospital in fact that has not been standardized by the Bureau of the government.

We cannot refrain from calling attention at this time to the desirability of using the metric system in this standardization work. Our country will eventually have to adopt the simpler and more universal metric system, and perhaps it is not being too fantastic to predict our eventual adoption of the twenty-four hour nomenclature (dropping the A. M. and P. M. designation) and the adoption of thirteen months of four weeks each instead of our inconvenient present calendar—all in the interests of simplification.

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### Twelve Months of the Basic Science Law in Minnesota

The Basic Science law has been in operation in Minnesota twelve months.

During this period no chiropractor has appeared before the Board for examination. Since the enactment of this law the number of chiropractic schools in the state has been reduced from three to one.

Four osteopaths have taken the Basic Science Board examinations and three have been granted certificates.

Board certificates on the basis of previous licensure have so far been issued to 3,231 physicians, 189 osteopaths and 493 chiropractors. A total of 253 have obtained certificates by examination.

Some caustic criticisms of Basic Science laws in general have recently been expressed and published. The main cause of complaint is that all chiropractors and osteopaths legally practicing at the time the law became effective are granted certificates without examination. The critic appears densely ignorant of the principle of the law that applies in this case, namely, that any such retroactive legislation which would take away rights previously granted by due process of law would be illegal.

What is being accomplished in our state is the requiring of a better educational foundation for those who in the future shall be legally entitled to treat the sick.

The same critic above mentioned assumes that passing the Basic Science Board examination is a mere matter of form. When one considers the personnel of our Board such an assumption is laughable.

The questions asked by the Board at the April 3 examination are appended for the benefit of any who might be inclined to agree with the critic referred to.

F. J. SAVAGE, M.D.

BASIC SCIENCE EXAMINATION—APRIL 3, 1928.

#### *Bacteriology*

1. Explain how you would differentiate streptococci from staphylococci by bacteriologic methods.
2. Explain how you would make a bacteriologic examination of the spinal fluid in a case of suspected meningitis.
3. Describe briefly the technic of the Wassermann reaction and name the conditions in which a syphilitic may give a negative reaction.
4. Explain in detail the methods for determining the presence of tubercle bacilli in (a) sputum, (b) peritoneal fluid.
5. How are the following infections disseminated: malaria, trypanosomiasis, yellow fever, typhus fever.

(Answer any three questions only.)

#### *Hygiene*

1. Discuss the procedures you would use in practice to prevent the spread of tuberculosis.
2. Name the pathogenic organisms that may be found

in sewage and discuss methods for the disposal of sewage.

3. Discuss methods for purifying the water supply of a city in the event that the water must be supplied from a river.

(Answer any one question only.)

#### *Pathology*

1. Describe fully four different pathologic conditions that may give rise to a hemiplegia.
2. Describe fully the tumors of the bladder.
3. Name all the diseases that may cause enlargement of the spleen and describe the histologic structure of the spleen in any one type.
4. Discuss the causes of fatty degeneration.
5. Discuss the structural and functional changes in the liver and kidney in chronic passive congestion.
6. Name the different diseases that may cause a marked unilateral enlargement of (a) the cervical lymph-nodes in a man 50 years old, (b) the axillary nodes in a woman 40 years old, (c) the inguinal nodes in a man 21 years old. Arrange these in the order of their frequency.
7. What are the usual postmortem findings in a person dead of pernicious anemia (gross and microscopic)?

(Answer any four questions only.)

#### *Physiology*

1. Discuss the mechanism of spinal reflexes, and give the main causes of their exaggeration and depression.
2. Discuss the maintenance of equilibrium.
3. Discuss the regulation of blood pressure.
4. Discuss the formation and excretion of bile.
5. Discuss the regulation of the temperature of the body.
6. Discuss the secretion of gastric juice.
7. Discuss hypoglycemia and hyperglycemia.
8. Discuss the nervous mechanisms concerned in urination.

(Answer any four questions only.)

## COMMUNICATION

North St. Paul, Minnesota,

March 23, 1928.

To the Editor:

For several years past there have been noted cases of Chickenpox following Herpes Zoster, or *vice versa*. Most of the references to these occurrences have been European.

On March 2, 1928, Mr. B. developed a well-marked case of Herpes Zoster involving the left pectoral region. On March 16, his only child, a boy of fourteen, came down with an unmistakable case of Varicella. As there was no other case of this disease in this town of 3,000 people at that time, and as diligent inquiry failed to find any exposure anywhere else, it is fair to assume that there was more than a coincident relation between the Herpes Zoster and the Chickenpox.

You may care to publish this report.

Yours very truly,

ERNEST W. COWERN, M.D.

## THE COMMITTEE ON PUBLIC HEALTH EDUCATION

### Minnesota State Medical Association

At the April meeting of the State Committee on Public Health Education the proposed program was reviewed and it was decided that the following objectives of the Committee should be continued:

#### OBJECTIVES

1. The small group discussion, or so-called Socratic method of evaluating the present attitude of the profession on the question of their relations as individual doctors to the public.
2. Unifying in some measure the wide variance of existing individual opinion.
3. Proceeding cautiously, releasing nothing to the public that has not been thoroughly discussed and that has not had the approval of the majority of the medical profession.
4. Encouraging the individual doctor as a practicing physician to be the exponent of public health education.
5. Encouraging groups such as hospital staffs to study the questions of their relations to the public.
6. Coöperating as far as requested with the component medical societies in their respective public health education programs.

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We know that members of the State Medical Association, because of their training, are the natural leaders in health problems.

The Primer, prepared by the committee, has now been published. Some two hundred members have participated in its making.

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The State Committee suggests for its second study questions confronting the local medical societies. Suggestions as to the following questions, their scope, and the proposed program are requested, and should be sent to the Secretary's office, 11 West Summit Avenue, Saint Paul, Minnesota.

#### YOUR LOCAL SOCIETY

1. *Do you discuss medical economic questions and relations to the public at your medical meetings?*
2. *What relations has your local society established with the newspapers in your community?*
3. *To what degree have your members addressed lay organizations on medical subjects?*
4. *What relations has your local society established with lay organizations?*
5. *What is the attitude of your society toward doctors participating in politics; for instance, as members of the legislature, the school board, welfare boards, et cetera?*
6. *What study has your society made on the question of State Medicine?*
7. *What principles of ethics has your organization decided upon?*
8. *Has your society made any study of contract and compensation practice?*
9. *In your local area, what percentage of the doctors are members of the State Association? What percentage of your members have a record for satisfactory professional conduct and ability?*

*Remember that the State membership is based entirely upon the membership of the county society.*

10. *What help is your local society rendering in the control of illegal practice?*
11. *Has your organization sought to properly influence the administration of free clinics and welfare work?*
12. *What is the outstanding action that your society has taken to solve these questions?*
13. *Will you help by answering, criticising, and making additions to the above questions?*

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The foundation of the program suggested is that the individual physician is the key to the question of public health education. His knowledge of health, preventive medicine, and disease marks him as a leader in the minds of his patients and the community.

The relation existing between the Minnesota State Medical Association and the public is that existing between the individual doctor and the public.

## MISCELLANEOUS

## MEDICAL MALPRACTICE SUITS\*

CZAR JOHNSON, M.D., F.A.C.S.  
*Lincoln, Nebraska*  
 (First Paper)

A suit for damages for alleged malpractice is a spectre which the doctor has never been able to accept with equanimity.

Notwithstanding that great scientific progress has been made in the field of preventive medicine, I have been unable to find any organized educational program for the prevention of alleged malpractice. The well established doctrine that testifying against a brother physician is a fraternal and ethical misdemeanor, and weekly abstracts of court decisions bearing upon the subject of malpractice published by medical journals, are post-mortem examinations rather than preventive medicine. In a majority of states medical defense committees assist in some capacity in the defense of malpractice suits.

The creation of State Medical Defense Committees marked a radical departure from long established customs of the medical profession and added to scientific and purely professional activities, sociologic and economic problems. I assume that the purpose of the defense committees, as conceived and instituted by organized medicine, was mutual protection and assistance in the event of unavoidable misfortune from unwarranted prosecution for alleged negligence or malpractice instigated by malicious, ignorant or selfish individuals. I assume that experience had taught those who were instrumental in the foundation of medical defense committees that the public is frequently careless in its acts and speech, often indifferent to medical problems, and that it, and also the medical profession, may harbor individuals who are malicious or avaricious. If my assumptions are correct, there is a legitimate reason for the existence of these committees. If there is a good reason for their existence there is an equally good reason for maximum efficiency without loss of the attributes of the profession.

In the past, so far as I have been able to learn, active defense of malpractice suits has been the only function of these committees. I admit the necessity of efficient defense, but here, as elsewhere, an ounce of prevention is better than a pound of cure.

The causation of suits for malpractice may be placed in one or more of the following classes:

- 1.—Malicious; either personal or professional, for personal, professional or financial gain.
- 2.—Circumstantial; wherein a combination of circumstances, misunderstanding or perversity of physical laws or the laws of health are contributing factors.
- 3.—Comparative; wherein both the physician and the patient contribute through carelessness, ignorance, indifference, misunderstanding or physical imbalance.

\*The second of a series of three articles on this subject by Dr. Johnson will appear in the June issue.

4.—Judgment; wherein the elements of the case are materially the result of the judgment used by the physician, who is not infallible.

5.—Inexcusable; where, because of incompetence, negligence, indifference or unwarranted treatment, disaster results.

The laws of all states governing malpractice provide reasonable protection, and the courts have never required the impossible, nor more care and attention than is the custom in the locality in which the physician practices.

Sometimes it is difficult to determine the prevailing custom. This lack of definiteness, when it exists, is an open invitation to malpractice suits and a most serious condition in the face of legal difficulties.

This, I think, presents our present status and my own theory of the properties incident thereto.

## PREVENTING MALPRACTICE SUITS

I now invite your consideration of the feasibility of methods calculated, not to defeat actions instituted, but to *discourage* and *prevent* their institution.

1.—The unit of value is the doctor. Physicians, individually and collectively, should have a working knowledge of the legal phases and acts that are free from liability; acts that are liabilities; and those that are borderline liabilities.

2.—*Written records* of clinical history, physical and laboratory examination, treatment and charges should be the inflexible rule. This does not require a voluminous document. Precise, accurate notes take but little time and space and are extremely valuable. The practice develops accuracy and concentration, prevents neglect and omissions, acts as a barometer in the treatment, has an excellent psychologic effect, and is a *sheet anchor in malpractice suits*.

3.—Consultations are a protection. They distribute responsibility, prevent mistakes and omissions, develop *esprit de corps* and prevent malpractice suits.

4.—A reasonable, standardized obstetrical and surgical technic; treatment of fractures; use of electrical apparatus; intravenous and new and unofficial drugs; new and unofficial diagnostic reagents and the therapy of infectious diseases should be adopted in each locality. I appreciate that this will, to a limited degree, interfere with personal initiative; however, it will at the same time safeguard the public and the profession, which is more important.

A physician who is unwilling to accept guidance or conform to established conventions has no moral right to expect or receive collective assistance, and I doubt that the medical profession has the right to risk its reputation or spend money to defend such an individual.

5.—The medical profession has been unable to escape the problem of economics. Disproportionate and non-uniform fees for apparently the same relative value of work and excessive fees for incompetent work cause, in many instances, dissatisfaction, and are frequently the primary cause of malpractice suits.

6.—Demoralizing credit extension has become a serious problem. The practice of charging the rich an

excessive fee on the pretext of being able thereby to render service to the poor is not charity and is too often the source of legal difficulties. It is a hybrid form of business. The terms rich and poor are relative and often vague. In actual practice the custom resolves itself into charging the individual who is thrifty and pays his obligations promptly an excess fee, in order to be able to render service for those who will pay the butcher, garage, gas station and movie theatre but who never acquire the moral or financial integrity to include the doctor. On the other hand, deserving charity should never be eliminated from the profession and can always be given without material loss.

There are many details in the prevention of malpractice that could with profit be added to a prevention program. I have endeavored to show in a general way that this phase of medical practice is deserving of more study and attention than has been accorded it in the past. If I succeed in irritating a sufficient number of physicians to stir up a prevention program, I will have, in Army parlance, "accomplished my mission."

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#### STATE BOARD OF MEDICAL EXAMINERS

The State Board of Medical Examiners was responsible for the arrest and conviction of one Peter J. Stolorow, licensed as a chiropractor and having an office in the Hamm Building, Saint Paul, on the charge of having performed an illegal operation, which resulted in the death, March 15, 1928, of a young girl who lived in Saint Paul.

It was through the efforts of the Board that the brother of the unfortunate victim filed two complaints against the defendant, the one charging him with the crime of manslaughter, the other with having performed the illegal operation. Through the county attorney's office the defendant was arrested, lodged in jail, tried and convicted of the charge of performing an illegal operation, to which charge he pleaded guilty. The sentence was four years in the penitentiary.

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#### ABSORPTION OF INSULIN FROM THE ALIMENTARY TRACT

In recent experiments advantage has been taken of the antitryptic affect of blood serum to protect insulin given by oral paths from pancreatic digestive destruction. Observations on a series of depancreatized dogs prove that insulin protected by blood serum from the proteolytic destruction of the digestive enzymes can be absorbed in significant amounts from the alimentary tract. While the experiments are promising, this is not the story of a completely dependable method of oral therapy; the results do not establish the usefulness of the host of proprietary insulin substitutes proposed for oral use. (Jour. A. M. A., March 24, 1928, p. 985.)

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## OBITUARY

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### Dr. John Grosvenor Cross\*

John Grosvenor Cross, a trustee of the Hennepin County Medical Society, died at Abbott Hospital, March 3, 1928, after a brief illness.

His father was Dr. Edwin C. Cross, a pioneer physician of Rochester, Minnesota, who came from Bradford, Vermont, with his wife in 1868, to make his home in the western world. John Grosvenor Cross was born May 8, 1870, and as he grew older attended the public schools of Rochester, and the University of Minnesota, from which he was graduated in 1892. His medical course was taken at Northwestern University, from which he obtained his degree in 1895. After this he practiced at Rochester for seven years and then went to Vienna, where he studied for two years, beginning in 1902.

Upon his return in 1904, he limited his work to internal medicine and began the practice which he carried on actively up to the time of his death.

In 1893 Dr. Cross was married to Frances Montgomery of Minneapolis, who, with two sons, Grosvenor M. and Roderic M. Cross, and a daughter, Louise, survives him.

Along with his medical practice, Dr. Cross was always ready to work earnestly on matters of medical education and organization. In 1916, he was president of the Hennepin County Medical Society and in 1917-18 of the Minnesota Academy of Medicine. He had been on the faculty of the University of Minnesota Medical School and chief of the medical division of the Minneapolis General Hospital. He was also a member of the Minnesota Society of Internal Medicine. A number of articles on medical topics have been furnished by him to the medical periodicals during his years of practice. Northwestern, Hillcrest, Abbott and St. Mary's Hospitals all were proud to have him on their staff lists.

He was a member of the Minneapolis Club, the Nu Sigma Nu and Chi Psi fraternities, and of St. Mark's Episcopal Church.

Dependable, earnest unflinching in his duty, unailing in his industry, he has always been a force in this state and in this community working towards the building up of ideals and standards of medical excellence.

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The following memorial to Dr. Cross was prepared for the medical staff at Abbott Hospital by Dr. A. T. Mann:

"In the passing of Dr. J. G. Cross we have lost one of the outstanding men in the profession. Always earnest, painstaking and sincere, he won the high regard of his fellows for the excellent quality of his work and the considerable mental capacity and the sagacity he brought to bear upon its numerous and perplexing

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\*Read before the Hennepin County Medical Society as a report of the Necrology Committee, April 2, 1928.

problems. He had a warm, broad sense of humor and personal charm which endeared him greatly to those who came into close contact with him, both among his professional fellows and among his patients. His professional friends held him in high esteem as a man of honor and a man of worth. He made it a point never to speak ill of anyone. His circle of friends was wide and increased as the years rolled on. However, he had a mild reserve and a feeling of personal dignity which naturally tended to limit the number of those who knew him well, but among those he numbered lifelong friends.

"To his patients he was more than a physician. He showed an interest which touched their personality broadly, a human interest in them which endeared him greatly to large numbers of those who came to him in busy practice.

"Born in Rochester, Minn., May 8, 1870, where he spent his childhood and youth, he returned there for the early years of his medical practice (1895-1902), after his graduation from the medical department of Northwestern University (1895), and then came to Minneapolis, where he soon began to make a place for himself, honored, respected and admired. He made a good beginning in his friendships while at the University of Minnesota, where he took a B.S. degree before studying medicine at Northwestern. As a member of the Chi Psi fraternity he was very happy and many of the fine friendships begun at this time have endured throughout his life.

"His professional life spans thirty-three years, seven at Rochester and twenty-six at Minneapolis. During this time he was a careful and fairly constant writer on subjects in the general field of medicine in which he was interested. 'Chronic Arterial Hypertension,' 'Causes and Care of Arterial Hypertension,' 'Notes on Heart Block' are among the titles of his most recent papers and 'Factors in Prognosis of Heart Disease' was just completed and ready for the printer three days before his death, March 3, 1928.

"Dr. Cross was a musician of considerable skill, an interested member of St. Mark's Church, and was on the Hospital Staff of the Abbott, Northwestern, Hillcrest, and St. Mary's Hospitals, and, at one time, the St. Barnabas and the City Hospitals, and the teaching staff of the University Medical School."

### Dr. William M. Newhall

Dr. William M. Newhall, former Minneapolis physician and surgeon, who had practised in Hennepin County since 1886, died Tuesday, April 10, at his home, Crystal Bay, Lake Minnetonka, after an illness of several months. He was 71 years old.

Dr. Newhall was born in Claremont, Minn., and received his early education in that city. Later he attended the Pillsbury Academy at Owatonna and Columbia University in New York City. He was also a graduate of the Rush Medical College.

After finishing school in the East, he returned to Minnesota and began to practise medicine in Red Wing.

In 1886 he moved to Minneapolis and practised there until 1898, when he moved to Crystal Bay. Dr. Newhall was recognized as one of the leading physicians and surgeons of the Northwest.

He is survived by a daughter, Virginia Newhall, of Crystal Bay; a sister, Mrs. Ida E. Glasby of Minneapolis; and a brother, A. O. Newhall, Yakima, Wash.

## REPORTS AND ANNOUNCEMENTS OF SOCIETIES

### MINNESOTA HOSPITAL ASSOCIATION

Officers: President, Dr. E. S. Mariette, Superintendent Glen Lake Sanitarium, Oak Terrace; First Vice President, Mr. H. B. Smith, President Northern Pacific Beneficial Association, St. Paul; Second Vice President, Miss Susan Holmes, Superintendent Abbott Hospital, Minneapolis; Third Vice President, Sister Patricia, Superintendent St. Mary's Hospital, Duluth; Secretary-Treasurer, Donald C. Smelzer, M.D., Superintendent the Chas. T. Miller Hospital, St. Paul. Executive Committee: Miss Harriet Hartry, Superintendent St. Barnabas Hospital, Minneapolis; Mrs. Pease Rexford, Superintendent Northwestern Hospital, Minneapolis; Mr. James McNee, Superintendent St. Luke's Hospital, Duluth.

The following is the tentative program of the Minnesota Hospital Association's annual meeting, which is to be held at the Curtis Hotel, Minneapolis, May 28 and 29.

The first meeting will be at 10:30 a. m., Monday, May 28. There will be an invocation by a local minister (to be selected later), an address of welcome by the Mayor, and a response by Mr. H. J. Hartwick, Superintendent of the Mayo Clinic. Dr. W. C. Alvarez of Rochester will read a paper on "Dietetics from the Viewpoint of the Physician." This paper will be discussed by Miss Edith Ferber of Duluth and Miss Florence Smith of Rochester.

At 12:30 p. m. there will be a luncheon, which will be presided over by Mr. Joseph Norby, Superintendent of Fairview Hospital, Minneapolis, and the speaker will be Reverend Doctor Bryn-Jones of Minneapolis.

The first part of the afternoon session will be the business meeting, followed by a paper by Dr. J. A. Myers of Minneapolis on "Should the General Hospital accept Tuberculosis Cases?" Following this there will be an open forum conducted by Mr. J. J. Drummond, Manager of the Worrell Hospital, Rochester, at which questions pertaining to hospital problems in general will be discussed.

At 7 p. m. there will be the annual banquet, at which Dr. Ray R. Knight of Minneapolis will be toastmaster, and the speakers will be Mr. Frank Madden, who is known as "Officer Mulcahy" to the radio world; Dr. Bert Caldwell, Executive Secretary of the American Hospital Association, Chicago; and Dr. Charles Mayo of the Mayo Foundation.

On Tuesday morning Mr. J. F. Reynolds, General Manager of the Minnesota Compensation Rating

Bureau, will talk on hospital insurance, followed by an address by one of the local hospital trustees (whose name will be given later).

At 10 a. m. another open forum, at which hospital problems will be discussed, will be conducted by Miss Margaret Rogers, Superintendent of Saint Luke's Hospital, Saint Paul.

In the afternoon there will be a ride in a chartered bus, followed by an organized conducted tour of the Minneapolis hospitals. This will close the meeting.

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#### AMERICAN ASSOCIATION FOR THE STUDY OF GOITER

The American Association for the Study of Goiter, consisting of internists, pathologists, radiologists, etc., as well as surgeons, will hold their fifth annual Conference on Goiter, in Denver, Colorado, June 18, 19 and 20.

Several men from foreign countries have signified their intention of attending. Professor Breitner of the Von Eiselberg Clinic, Vienna, and Professor Albert Kocher of Berne, Switzerland, have accepted places upon the program.

Addresses and discussions on Prophylaxis, Medical Treatment, Endemic Goiter and Cretinism from the Public Health Standpoint, are on the program for the first afternoon.

Pathology, various phases of Surgical Treatment, etc., will be considered the last two afternoons.

All members of State Medical Societies are invited to attend.

Dr. Gordon S. Fahrni of Winnipeg, Canada, is the President and Dr. Kerwin Kinard of Kansas City is Vice President.

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#### AMERICAN PSYCHIATRIC ASSOCIATION

The eighty-fourth annual meeting of the American Psychiatric Association is to be held June 4, 5, 6, 7, and 8, at the Hotel Radisson, Minneapolis, Minnesota. The sessions begin at 10:00 a. m. and 2:00 p. m. daily. The annual address is to be given by Professor Roscoe Pound of the Harvard Law School at 8:30 p. m., Wednesday, June 6, and is to be followed by the President's reception.

Monday, June 4, will be devoted to the Section on Convulsive Disorders. Tuesday, June 5, will be given over to general sessions, including Convulsive Disorders and Mental Hygiene. Dr. Wm. J. Mayo of Rochester will give the address of welcome, Tuesday morning. Wednesday, June 6, is reserved for papers on Pathology; Thursday morning, June 7, for Clinical Psychiatry. The afternoon session will be shared with the American Psychoanalytic Association on Psychoanalysis. Round Table Conferences are to be held in the evening of Thursday. The final session on Friday morning, June 8, will be held in conjunction with the American Psychopathological Association on Psychopathology.

Sessions are open to those professionally interested. Sight-seeing and shopping tours, a complimentary

luncheon, and general entertainment are to be arranged for ladies accompanying members.

A one and one-half fare railroad rate has been granted on condition that two hundred fifty members and dependent relatives attend the meeting and obtain certificates. A ticket at regular one-way tariff fare to Minneapolis must be obtained from May 31 to June 6, inclusive. When tickets are purchased one must get a CERTIFICATE (not a receipt).

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#### INTER-STATE POST GRADUATE MEDICAL ASSOCIATION

The 1928 tour abroad of the Inter-State Post Graduate Medical Association of North America will leave New York June 16, returning August 6. The party will be limited to one hundred and twenty-five and the blanket cost is \$995.00.

Besides a medical program on board ship, clinics will be held in the following European cities: Paris, Berne, Zurich, Munich, Vienna, Budapest, Prague and Berlin.

Further information may be obtained from Dr. W. B. Peck, Managing Director, Freeport, Illinois.

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#### STEARNS-BENTON COUNTY MEDICAL SOCIETY

The Stearns-Benton County Medical Society met at the new St. Cloud Hospital Thursday evening, March 29, 1928. There were thirty-four members present.

##### PROGRAM

"Intestinal Obstruction"—Dr. R. N. Jones, St. Cloud.

Discussion: Dr. C. B. Lewis, St. Cloud; Dr. Clarence Jacobson, Kimball.

"Nephroses"—Dr. W. L. Freeman, St. Cloud.

Discussion: Dr. H. B. Clark, St. Cloud; Dr. August Kuhlman, Melrose.

"Infant Mortality During 1927" (in the city of St. Cloud)—Dr. W. B. Richards, St. Cloud.

Discussion: Dr. F. J. Schatz, St. Cloud; Dr. M. J. Kern, St. Cloud.

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#### WEST CENTRAL MEDICAL SOCIETY

The regular meeting of the West Central Medical Society was held April 11 at Morris, Minnesota, following a dinner at the Merchants Hotel, at which members were the guests of Drs. John T. Leland, C. I. Oliver, B. M. Randall, N. F. Doleman and W. T. Judge.

The scientific program included the following papers:

"Rectal Examinations"—Dr. J. F. Cumming, Morris.

"The General Practitioner"—Dr. E. T. Fitzgerald, Morris.

Report on the secretaries' conference in Saint Paul—Dr. H. Linde, Cyrus.

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#### WRIGHT COUNTY MEDICAL SOCIETY

A meeting devoted to medico-legal subjects presented by attorneys was held April 5 by the Wright

County Medical Society at the home of Dr. J. J. Catlin in Buffalo.

Mr. Anderson, Judge of Probate Court of Wright County, spoke on the subject of the disposition of a dead body from a legal standpoint. Mr. Welch, county attorney, spoke briefly on legal questions of interest to doctors, particularly with respect to the duties of the coroner. Mr. H. S. Whipple presented a paper on the question of malpractice suits. All three subjects evoked considerable discussion.

Dr. C. B. Wright, president of the State Association, and Dr. N. O. Pearce, chairman of the Committee on Medical Education, also addressed the society.

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## OF GENERAL INTEREST

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Dr. William H. Rumpf, Jr., formerly of Saint Paul, is now located at 516 La Salle Building, Minneapolis.

Dr. Thomas Myers of Saint Paul is traveling in Europe and will visit the principal pediatric centers while there.

Dr. and Mrs. Robert Earl of Saint Paul have announced the engagement of their daughter, May, to James Slocum of Minneapolis.

The Minnesota State Board of Examiners in the Basic Sciences recently established reciprocity with the Wisconsin Basic Science Board.

Dr. A. E. Olson of Duluth has returned to his practice following a five months' trip abroad, where he did post-graduate study in the universities of Vienna and Budapest.

Dr. J. A. Myers of Minneapolis presented a paper before the Jackson County Medical Society of Kansas City, the evening of March 13. The subject was "Hospitalization for the Tuberculous."

Marcus Anderson, son of Dr. and Mrs. Arnt G. Anderson of Minneapolis, died March 24, as the result of an automobile accident in which his skull was fractured. He was but 19 years old.

Dr. Lee M. Miles has announced the opening of new offices at Suite 451, Lowry Medical Arts Building, Saint Paul, where he will continue his practice of obstetrics, surgery and female urology.

The marriage of Miss Margaret Schlutz, daughter of Dr. and Mrs. Frederic Schlutz of Minneapolis, to Dr. Harrison A. Tinker, son of Dr. and Mrs. E. T. Tinker of Minneapolis, was solemnized Saturday, March 31. Dr. and Mrs. Tinker will be at home after June 15 at 1433 West Thirty-first Street, Minneapolis.

An organization to be known as the Physicians' Service Bureau, membership in which is to be limited to

those enrolled in the Ramsey County Medical Society, Saint Paul, is in the process of formation to provide the local physicians with a credit bureau, collection agency and telephone exchange. The advisability of such an organization has become increasingly manifest and the completion of plans is the outcome of considerable discussion and planning for some months past. The Bureau expects to begin operations at once, the telephone service to be available July 1.

Physicians in the Twin Cities and Rochester had the opportunity to hear a real endocrinologist recently in the person of Professor Julius Bauer of Vienna. Brought to the Twin Cities through the efforts of the Minnesota Pathological Society and the Minneapolis and Saint Paul Clinical Clubs, Professor Bauer gave several interesting addresses on the present status of knowledge of the endocrine glands and conducted some valuable medical clinics. Professor Bauer's command of English was outstanding and the conservative limitation of his statements to proven facts was most satisfying.

Laws appropriating funds for the education of handicapped children have been enacted in a number of states and the interest in such classes is growing in communities throughout the country. As the demand for teachers with special training for this work is greater than the supply, training courses for the teachers of sight-saving classes are being offered at several universities. This summer the University of Cincinnati and the University of California will offer elementary courses for the training of sight-saving class teachers, and the University of Chicago will give an advanced course, the latter being limited to teachers who have had elementary training in this work.

Information concerning the courses may be had from the respective universities or from the National Society for the Prevention of Blindness, 370 Seventh Avenue, New York City.

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## BARBITAL ADDICTION

The wide use of hypnotic preparations by the public has brought new problems for solution. When a single practitioner can report a hundred cases of acute poisoning or chronic addiction with one of the newer hypnotic drugs, the situation is serious. Barbitol, introduced as veronal, has an increasing lay popularity for self administration. Its habit-forming propensities are sufficiently well recognized to merit the special designation of barbitolism or veronalism. A host of proprietary hypnotics now on the market may induce in greater or less degree the same result. Addiction to barbitol appears not to stop with the production of moderate euphoria. Judgment, orientation as to time, and insight are probably the most severely harmed of the psychic faculties and are the last to clear up in convalescence. The "safe" hypnotics may become menacing to the public welfare. (Jour. A. M. A., March 10, 1928, p. 769.)

## PROCEEDINGS OF THE MINNESOTA ACADEMY OF MEDICINE

Meeting of February 8, 1928.

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Wednesday evening, February 8, 1928. Dinner was served at 7 p. m. and the meeting was called to order at 8 p. m. by the President, Dr. John E. Hynes. There were 26 members and 1 visitor present.

The minutes of the January meeting were read and approved.

The program of the evening consisted of the following case reports:

DR. OSCAR OWRE (Minneapolis) reported three cases:

1. Papillary carcinoma of the kidney pelvis. M. H., woman, aged 75, had been treated for albuminuria the last two years. During the last six months she has had two or three attacks with blood in the urine and a dull ache and pain in the back on the right side. She had been on a rigid diet for a supposed Bright's disease. She was admitted at the Swedish Hospital for cystoscopic examination on Dec. 29, 1927. Cystoscopic examination showed a normal bladder. The right and left ureteral openings appear normal. The left ureter showed a swirl of clear urine with a good contraction. Blood appeared to dribble from the right meatus. Both ureters were catheterized. Blood could be made to flow from the right catheter only when syringed out with water. An indigo-carmin test, given intravenously, showed a hyperfunctionating kidney on the left and no color in twenty minutes from the right. A pyelogram of the right pelvis shows almost a complete filling defect of the pelvis, very much like the point of the small finger. There is a thin line of shadow-casting fluid taking the form of an irregular circle and a few traces in the inside of the circle. (X-ray shown and specimen displayed.) As you will see, this is a papillary carcinoma of the pelvis of the kidney. In the pelvis a large clot about the size of an indoor baseball was found. This clot was old and showed a great deal of fibrin and appears almost organized in places. The thin irregular circular films of shadow-casting fluid occupied the periphery of the clot and the inner surface of the dilated pelvis (hematonephrosis). The irregularity of the line is caused by numerous implants of the original papilloma situated in the pelvis. There was no difficulty in removing this kidney as there were no adhesions or infiltrations about it. The growth was entirely inside the pelvis. The kidney cortex was very thin and practically no secretory tissue remained. She has made a splendid recovery. However, the prognosis in these cases is looked upon as quite unfavorable. (P. S. X-rays of the entire body showed no metastases.)

2. Male, 62 years of age, referred by Dr. Baker, February 8, for examination. Hematuria following exertion. The patient noticed blood in the urine two years ago. No vesicle distress and no pain on either side of the back. Urination was not frequent and the patient

did not have to urinate at night. He noticed, however, that at times he could pass as much as a quart of urine. The prostate felt small on rectal examination. On passing the cystoscope 16 ounces of bloody residual urine was removed. The bladder mucosa appears non-inflammatory. The left ureter was normal and the contraction and spurts of urine indicated a hyperfunctionating kidney. The right looked less active. There was no enlargement of the prostate intravesically. Just back of the right ureter and on the lateral wall of the fundus could be seen the orifice of a diverticulum. Bloody fluid could be seen coming from the orifice. By further distention of the bladder and altering the position of the cystoscope, it was possible to see, just inside of the orifice, some foreign matter which was not stone but had the appearance of tumor tissue. An indigo-carmin test showed a good color in one and one-half minutes from the left, and a fair color in eight minutes from the right ureteral opening. It is important to know that there is no communication between the ureter and the diverticulum (no blue color was seen coming from the orifice of the diverticulum); however, a shadow-casting catheter was passed to the kidney on the right side and another was coiled up in the diverticulum. An x-ray shows that they do not lie in contact with each other. The cystoscope was removed, leaving the bladder moderately distended. Two and one-half ounces of a 33½ per cent solution of sodium iodide was injected through the ureteral catheter into the diverticulum. Some of this will naturally escape into the distending medium of the bladder but there will be a disparity in the density or concentration of the fluid in the diverticulum and the bladder. (X-ray plates shown.) Here are two sacs almost of equal size with a defect in the filling of the diverticulum on the lower and lateral surface, demonstrating a tumor in the diverticulum and the source of the hematuria.

3. J. B., male, aged 36, referred by Dr. Arnold, February 8, 1928. The patient gave a history of having passed six ureteral stones on an average of once a year. This was always accompanied with a great deal of discomfort and pain, principally in the region of the right kidney. A complete x-ray plate showed no evidence of calculi in the genito-urinary tract. He was at present free from pain. The cystoscopic picture was that of a normal bladder, perhaps some redness about the right ureteral meatus. The right ureter showed very little action and a thin fluid was seen to dribble from the same. The left showed an over-active kidney. Indigo-carmin showed very promptly from the left and no color from the right in twenty-five minutes. A pyelogram of the right kidney displayed an unusual elongated renal pelvis and a hydro-ureter for a very short distance and then a very marked kink or crochet-hook ureter. The picture suggests, with little doubt, that of a kink produced by an anomalous or adventitious vessel.

### DISCUSSION

DR. A. SCHWYZER (St. Paul): This was indeed a very splendid clinic. In the first case, you can readily see how the affected side would only dribble, and the

urine would hardly get by the enormous blood clot at all. The tumor is, of course, carcinoma; it has a very broad base; in fact it comprises half the surface of the cavity. These tumors are rare. I showed you one papillomatous carcinoma some time ago where the tumor was in the pelvis of the kidney and was about the size of an egg yolk and had a reasonably small base. Nevertheless it was a papillary carcinoma. The diagnosis from the  $x$ -ray picture as Dr. Owre has developed it is simply beautiful.

In regard to the second case, the diverticulum of the bladder, its demonstration was as pretty as anything one can see in this line. First seeing the tumor in the diverticulum with the cystoscope then showing it on the screen. It just shows what can be done if the case is in expert hands. The coiling up of the catheter in the diverticulum, and especially the injection of the strong contrast solution into the diverticulum, with its gradual permeation into the water-filled bladder, appeals to one very much. Was the right ureter in the diverticulum?

DR. OWRE: No, that was independent. We had to demonstrate that because that is an important point.

DR. SCHWYZER: I agree with Dr. Owre, in the second case, that he had to deal with a congenitally defective kidney where a plastic in the uretero-pelvic junction would not do any good.

DR. WM. LERCHE (St. Paul): I have used the method of injecting two fluids of different densities for roentgenographic demonstration of diverticula of the bladder. The contrivance described by me in the *Annals of Surgery*, February, 1912 (a small rubber bag tied to a ureteral catheter), is introduced into the diverticulum, by the aid of the cystoscope. A fluid of greater density than that already filling the bladder is slowly injected into the bag in the diverticulum, and, as this fluid distends the bag, the fluid of lesser density present in the diverticulum is gradually forced into the bladder.

For smaller diverticula I have devised another method, by which, with the aid of a double catheter to which is attached a small sausage-shaped bag, the opening into the diverticulum can be closed and the latter filled with fluid of desired density.

DR. OWRE (in closing): In children and young adults, without severe infection, it is very important to ligate the adventitious vessel and try to conserve the kidney. In this case the kidney was so bad that I advised its removal. As regards the removal of the diverticulum, a very good plan is of course a wide exposure and then pack the cavity of the sac through the orifice with gauze until it is full. It can then be dissected out more easily.

At this time it may not be out of place to speak about the advisability of cystoscopy in cases of enlarged prostate. I believe, if the cystoscope can be easily inserted and without force or injury, it should be done. In cases of diverticula it often becomes necessary to resect them later even though the prostate has been removed. Further we often find, associated with adenoma of the prostate, foreign bodies, stones, and

papillary carcinoma of the bladder. One case of diverticulum that I recall was a man in the care of the late Dr. Ringnell. He removed a large adenomatous prostate and after the suprapubic wound healed the patient still had 500 c.c. of foul residual urine. He was to come under my care but went to Dr. Bransford Lewis, who found a large diverticulum which he removed with complete recovery. The urine was not foul before the prostatectomy and the orifice could no doubt have been seen had he been cystoscoped. This is an argument for cystoscopy before prostatectomy. I could cite many others. Many seemingly large diverticula will drain after the prostate has been removed; others will not. It guards the prognosis if we have previously examined the bladder.

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DR. F. W. SCHLUTZ (Minneapolis) reported the following case:

The case concerns a baby girl who was admitted to the University Hospital when she was two and one-half months old for the treatment of malnutrition and some chest condition. The birth was normal and at term. Some respiratory difficulty developed shortly after birth and was more or less continuous up to admission of the baby. This was frequently accompanied by cyanosis. Breathing was constantly rapid. There was no hyperpyrexia. In spite of regular and adequate breast-feeding, the baby showed steady decline in weight and presented considerable malnutrition and great weakness at the time of admission. An  $x$ -ray examination taken shortly before showed some ill-defined abnormal chest condition in the form of a density or shadow involving almost the entire right lung. Atelectasis was thought of. Other pathological conditions, such as chylothorax, tuberculosis, tumor, diaphragmatic hernia, etc., were considered. Careful examination ruled out all these conditions. A thoracocentesis yielded about 50 c.c. of a limpid viscid fluid free from fat and cellular elements but with a high content of albumin. Removal of this fluid gave temporary relief. At subsequent aspirations as much as 20 c.c. of such fluid was removed. The rapid filling up of the cavity indicated a cyst not connecting with the bronchi.

X-ray pictures taken before and after injection with sodium iodide confirmed this and showed the cyst to be intrapulmonary. The constant filling of the cavity with the resulting embarrassment of respiration and disturbance of the nutrition suggested the advisability of closed, continuous drainage. This was accomplished by the use of a trochar and the usual operative procedure. Several blood transfusions were given to improve the infant's general condition.

The cavity was irrigated at first with saline solution; then with Dakin's solution, and finally with a 0.5 per cent to 1 per cent formalin solution. This procedure was carried out twice daily. After a period of about two months of this treatment the cavity had decreased considerably in size and would hold only between 5 and 8 c.c. of fluid. The child's general condition had improved remarkably. There was no respiratory difficulty, and very good gain in weight.

On account of the probable bronchogenic nature of the cyst and the possibility of the presence of other cysts connecting with the bronchi, a bronchoscopy with injection of lipiodol was considered. This procedure was carried out and, while successful, was attended by fatal consequences about forty hours after the operation. Death seemed to be due to shock and collapse.

A limited autopsy on the chest showed the presence of an intrapulmonary cyst of the lower part of the right lung, walled off by dense masses of fibrous tissue. There was considerable lipiodol in both bronchi and complete gross absence of acute pulmonary inflammation.

#### DISCUSSION

DR. A. SCHWYZER (St. Paul): This case is pretty difficult to diagnose. It had been five months since the first puncture was made. From the first picture it looked as though the pleura was free. It is known that we sometimes have very large dermoids, but it was not a dermoid. Apparently it was a thin-walled cyst in the beginning, containing slimy fluid. What could that be? There is one condition that comes to my mind and that would be a cyst of the mediastinum or a thymus cyst. The thymus apart from a rudimentary anlage at the fourth branchial pouch comes from the third branchial pouch and from there travels down into the chest. Kuersteiner, in Bern, had made serial sections of the whole neck of newborn babies along that tract and he found little remnants of thymus along the tract and at times some little cysts. When we have a cyst behind the sternum, the thymus cyst is the most probable. A few years ago I saw one of those cysts that ran down behind the sternum. It was of considerable size. From the picture I would not say this was not a thymus cyst.

DR. WM. LERCHE (St. Paul): I agree with Dr. Schlutz and Dr. Schwyzer that there was no indication for bronchoscopy in this case. I have not seen reported a cyst of the lung of such a size as the roentgenogram indicates in Dr. Schlutz's case, but there have been several cases of multiple cysts of the lungs reported. I would like to know if the cyst was entirely surrounded by lung tissue.

DR. H. L. ULRICH (Minneapolis): In regard to the thymus, I think that was probably the origin of the cyst in this case.

DR. SCHLUTZ (in closing): The thymus was found intact at autopsy in this case; but that would not necessarily mean that this cyst did not have any connection with the thymus. In my opinion, bronchogenic origin would seem more likely. Analysis of the mass has not yet been made. I have never seen a similar case. I am quite certain that the bronchoscopy was an ill-advised procedure.

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DR. J. F. HAMMOND (St. Paul) reported two cases:

1. Miss W., age 17, was operated upon Feb. 17, 1923. There was a double pyosalpinx with tubo-ovarian abscess in the left side. The mass in the left side extended up to the brim of the pelvis. Both tubes were removed; a portion of the left ovary was re-

sected, and a wedge-shaped piece of the uterus was removed by the Blair-Bell method. The right ovary was left intact. The patient left the hospital apparently well in about three weeks.

On July 28, 1926, the patient was re-admitted to the hospital with a nodule in the lower end of the old scar in the abdomen, which was about the size of a walnut. The mass was a dark red color, was quite fixed and seemed to be attached deep in the abdominal wall. It was not tender. There was some serum about the edges.

The patient stated she first noticed a small nodule appearing in the scar about six months after the operation; otherwise she had been quite well. The mass enlarged very slowly and was sore during each menstrual period. Finally, for the last year there was a discharge of blood from the scar with each menstrual period. In other respects the patient was quite well.

The patient was operated upon July 30, 1926. The scar with the mass was dissected out. It was found to extend through the abdominal wall and appeared to be attached to the right ovary. There were some loops of small intestine firmly adherent to the mass. A portion of the ovary was removed with the mass. There was some difficulty in closing the abdomen as the fascia was excised with the mass rather widely. The wound healed perfectly and the patient made an uneventful recovery.

The patient left the city after her last operation but reported when visiting here in August, 1927. She stated that she felt very well. She menstruates regularly every four weeks; the flow was moderate in amount and lasted three days. She had no pain. On examination the pelvis was in good condition. The stump of the uterus was well up, freely movable, and there was no tenderness.

The microscopic diagnosis was adenoma of the endometrial type. It is quite probable that this ectopic endometrial tissue can be accounted for by the excision of the top of the fundus. The endometrium may have become directly implanted in the wound or may have become implanter on the ovary and developed from there by continuity. There was no evidence of a chocolate cyst or endometriosis of the right ovary at the previous operation. In this particular case there are other possible modes of development of the endometrium but the direct transplant is the most likely.

2. The second case was that of a woman 45 years old. She complained of a lump which was situated in the lower end of an old appendectomy scar. She had had her appendix removed twelve years before in another city. Judging from the scar, a split-muscle incision was used. She was told her appendix had ruptured on the way to the hospital and that the appendix and the right ovary, which were gangrenous, had been removed. The patient recovered without any particular difficulty. On account of some menstrual disturbance and pelvic distress, the patient was again operated upon in a St. Paul hospital on July 30, 1926. This time she was told she had a tumor the size of an orange. The record of this last operation was seen by me. A low

midline incision was made and a fibroid the size of a walnut was found on the anterior surface of the uterus and was removed. The uterus was recorded as being twice its normal size.

This patient first came under my observation January 29, 1928. She stated that the lump was first noticed in September, 1927. It gradually increased in size and lately turned black and bled at times. She stated it was painful at each menstrual period. Her menstruations had been increasing in amount during the last year. She had some pelvic discomfort, which also was increasing during the last year.

On examination there was a dark colored nodule about the size of a hazel-nut in the lower right quadrant of the abdomen. It was cystic, quite indurated, about the edges, with no tenderness. It was fixed. On vaginal examination the cervix was found up under the symphysis, the fundus, the size of a three months' pregnant uterus, was quite hard and irregular in outline. There was some general pelvic tenderness. Nothing special was made out in the adnexa. Otherwise the history and examinations were negative.

An operation was performed on January 30, 1928, and the abdomen was opened by low midline incision. There were extensive adhesions in the pelvis; the uterus, which was detached from its anchorage on the left side, was adherent in the culdesac. There were two or three interstitial fibrous nodules; the left tube was gone; the left ovary was bound down behind the uterus; the right adnexa was gone except a small portion of what seemed to be the ovary, which was firmly adherent to the abdominal wall under the lower end of the old appendix scar. The uterus was amputated, and the left ovary removed. The old appendix scar with the nodules was dissected out with the remaining portion of the right adnexa. There were several fibroids found in the uterus, as the specimen shows.

Microscopical examination showed the nodules to be made up of endometrial tissue. The second or later operation probably had nothing to do with the development of this endometrioma. I think it is quite possible that she had a chocolate cyst in the right ovary rather than a gangrenous ovary at the time of the original operation and that this tumor developed from that source.

DR. ARNOLD SCHWYZER (St. Paul) reported two cases:

1. A case of thrombocytopenic purpura hemorrhagica.

2. Tumor of the cerebello-pontile angle (left side acoustic tumor). Operation under local anesthesia.

#### DISCUSSION

DR. SCHLUTZ (Minneapolis): I would like to ask Dr. Schwyzer whether the child showed any increase in blood platelets on the third or fourth day after the transfusion. It is reported that this change occurs in three or four days. In a recent issue of the

Wiener Archiv für Innere Medizin, Hugo Krasso of the Clinic of F. Kovács in Vienna reports some of these cases in which he had very excellent results with repeated massive transfusions. He contends that one can get almost the same results with massive transfusions that one can get with removal of the spleen. This statement was interesting to me because it is generally believed that one must remove the spleen to be really successful.

DR. ULRICH (Minneapolis): I want to make two comments on the first case. Personally I have never seen a case of primary thrombocytopenia in the male. I have seen it only in the female.

The second point I want to make is that there has been too much emphasis placed on the blood picture in these cases. There is also a capillary factor. Bleeding does not occur according to the law of how many thrombocytes there are in the blood. There is some other factor. We have a factor here of capillary disease which may go way back into the field of primitive reticula endothelial physiology.

DR. SCHWYZER: In answer to Dr. Schlutz, the most improvement in blood platelets was three days after the massive transfusion but only reached 33,000. Then it went down again. Right after the splenectomy the highest was 38,000, but two days afterwards it was only 26,000. The child was very much improved after that massive transfusion, although for the first twenty-four hours after the massive transfusion we were worried on account of the filling up of the bronchi with secretion. After that and until we did the splenectomy the child was in excellent shape. There was no marked change visible after the splenectomy, as she had already improved much after the massive transfusion, but we felt more safe about her. The child has remained in excellent condition since.

In reply to Dr. Ulrich, this patient was a girl. The capillary factor is emphasized by this case, as we had 70 minutes' bleeding time and only 6 minutes' coagulation time.

CARL B. DRAKE, M.D.,  
Secretary.

#### GRAPEFRUIT AS A "PATENT MEDICINE"

In October 1927 the *Journal of the Michigan State Medical Society* printed an utterly preposterous article entitled "The Therapeutic Value of Hill Grown Grapefruit." Inadvertently, an abstract of this appeared in The Journal of the American Medical Association. There is not the slightest scientific evidence that any kind of grapefruit has any curative virtues in diabetes. The article mentioned vaunts the alleged potency of a special brand of grapefruit; it refers to the case of a Dr. Roy who has been exploiting himself in this connection for several years and now, apparently, it has led to a real-estate promotion and to the foundation of a sanatorium company by the Michigan physician. (Jour. A. M. A., March 3, 1928, p. 696.)

## BOOK REVIEWS

Books listed here become the property of the Ramsey and Hennepin County Medical libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

**TRIUMPHS OF MEDICINE.** Henry Herzog, Jr. \$3.00. 310 pages. New York: Doubleday, Page and Co., 1927.

This book represents an attempt to give the history of medicine in simple language which can be understood and appreciated by the lay reader. In reality, it is a history of certain men and phases of medicine rather than an outline of the development of the whole. The choice of subjects is good, the language is simple and well adapted to anyone without knowledge of a medical vocabulary. The first chapter, on the separation of medicine from priestcraft, with the rise and fall of the barber surgeons, is well told and

will be of interest to anyone. Other chapters on anesthesia, vaccination, insulin and "instruments of precision" are comprehensive and complete, but many of the other chapters seem to be somewhat incomplete in that they deal only with the early history without the subsequent development. The history of anatomy, physiology, surgery, drug therapy and hospitals is discussed as well as the rôle played by microorganisms, infant mortality, preservation of teeth and "prevention."

The book is the chronicle of medicine told in hard, dry facts with all romance omitted, and to him who reads primarily for pleasure it will prove to be uninteresting, but to him who is seeking definite information expressed in simple language, it will be of great value. It should be known by physicians and recommended to their lay friends; it should be in every library and reading room and it should do much to make the general public understand the foundations and aims of the science of medicine. It therefore serves a definite purpose in the education of the laity.

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Best, F. E. Wells  
Boysen, H. Welcome  
Broberg, J. A. Blue Earth

Butz, J. A. Monterey  
Chambers, W. C. Blue Earth  
Cooper, M. D. Winnebago  
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Logan, F. W. Blue Earth  
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McGroarty, J. J. Easton  
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Annual meeting, subject to call of President.

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Olson, W. P. Gaylord  
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Paul, L. W. Canby  
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Anoka, Isanti, Kanabec, Mille Lacs and Sherburne Counties.

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Annual meeting, June.

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Stocking, Fred F. Milaca  
Swennes, O. S. Wahkon  
Swenson, Charles Braham  
Vik, Melvin Onamia  
Vrooman, F. E. St. Francis

### CHISAGO-PINE COUNTY MEDICAL SOCIETY

Regular meetings, quarterly.

Annual meeting, May.

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Ehmke, Wm. C. Willow River  
Flom, A. O. Chisago City  
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†Application for Emeritus or Honorary membership not completed.

## CLAY-BECKER COUNTY MEDICAL SOCIETY

Regular meetings, January, April, July and October.

Annual meeting, October.

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Aborn, W. H.†	Hawley
Archibald, Frank M.	Mahnomen

Bergheim, M. C.	Hawley
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Flancher, Leon H.	Lake Park
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Hagen, Olaf J.	Moorhead
Heimark, J. H.	Moorhead

Humphrey, E. W.	Moorhead
Larsen, O. O.	Detroit Lakes
Pardee, Katherine	New York City
Rutledge, L. H.	Detroit Lakes
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## DODGE COUNTY MEDICAL SOCIETY

Regular meetings, January, May and September.

Annual meeting, third Wednesday in September.

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Adams, R. T.	Mantorville
Affeldt, Daniel E.	Kasson
Baker, Harry R.	Hayfield
Bigelow, C. E.	Dodge Center

Clifford, F. F.	West Concord
Flores, O. T.	Dodge Center
Harrison, E. E.	West Concord
Smith, F. D.	Kasson

## FREEBORN COUNTY MEDICAL SOCIETY

Regular meetings, quarterly.

Annual meeting, December.

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Branham, D. S.	Albert Lea
Burns, H. D.	Albert Lea
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Annual meeting, February.

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Aanes, A. M.	Red Wing

Anderson, S. H.	Red Wing
Bjorg, C. W.	Cannon Falls
Claydon, L. E.	Red Wing
Conley, Alvah A.	Cannon Falls
Cremer, M. H.	Red Wing
Dewey, G. W.	Goodhue

Johnson, A. E.	Red Wing
Jones, A. W.	Red Wing
McGuigan, H. T.	Red Wing
Sawyer, H. P.	Goodhue
Smith, M. W.	Red Wing
Steffens, L. A.	Red Wing

## HENNEPIN COUNTY MEDICAL SOCIETY

Regular meetings, first Monday of month.

Annual meeting, first Monday in January.

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Beard, Archie H.	Minneapolis
Beard, R. O.	Minneapolis

Bedford, E. W.	Minneapolis
Bell, E. T.	Minneapolis
Bell, J. W., Sr.	Minneapolis
Benedict, E. E.	Minneapolis
Benjamin, A. E.	Minneapolis
Benn, F. G.	Minneapolis
Berglund, Hilding	Minneapolis
Bessesen, A. N., Sr.	Minneapolis
Bessesen, A. N., Jr.	Minneapolis
Bessesen, Daniel H.	Minneapolis
Bessesen, W. A.	Minneapolis
Bishop, Chas. W.	Minneapolis
Bissell, F. S.	Minneapolis
Blake, Jas.	Hopkins
Blaustone, Henry H.	Minneapolis
Blumenthal, Jacob	Minneapolis
Bockman, M. W. H.	Minneapolis
Booth, A. E.	Minneapolis
Boquist, E. T. W.	Minneapolis
Boquist, Harold S.	Minneapolis
Boreen, C. A.	Minneapolis
Borgeson, Egbert J.	Minneapolis
Bouman, H. A.	Minneapolis
Bracken, H. M.	Claremont, Calif.
Bratrud, A. F.	Minneapolis
Brooks, Chas. N.	Minneapolis
Brown, Edgar D.	Minneapolis
Brown, Edw. J.	Minneapolis
Bulkley, Kenneth	Minneapolis
Burling, Temple	Minneapolis
Butler, John	Minneapolis
Byrnes, W. J.	Minneapolis
Cabot, George S.	Minneapolis
Cabot, V. S.	Minneapolis
Callenstrom, G. W.	Minneapolis
Camp, W. E.	Minneapolis
Campbell, L. M.	Minneapolis
Campbell, Robert	Minneapolis
Cardle, Archibald E.	Minneapolis

Carey, Jas. B.	Minneapolis
Carlaw, C. M.	Minneapolis
Caron, Robert P.	Minneapolis
Chamberlain, H. E.	Minneapolis
Cheleen, S. J.	Minneapolis
Cherry, Chas. H.	Minneapolis
Chesley, A. J.	Minneapolis
Cirkler, A. A.	Minneapolis
Clark, H. S.	Minneapolis
Condit, W. H.	Minneapolis
Cook, Henry Wireman	Minneapolis
Cooperman, H. O.	Minneapolis
Corbett, J. Frank	Minneapolis
Cosman, E. O.	Minneapolis
Crafts, Leo M.	Minneapolis
Cranmer, Richard R.	Minneapolis
Creighton, Ralph H.	Minneapolis
Curtin, John F.	Minneapolis
Cutts, John F.	Minneapolis
Dady, Elmer E.	Minneapolis
Dahl, Elmer O.	Minneapolis
Dahl, John A.	Minneapolis
Dahlstrom, A. W.	Minneapolis
Daniel, Donald H.	Minneapolis
Daniel, Lewis M.	Minneapolis
Dart, Leslie O.	Minneapolis
Devereaux, T. G.	Wayzata
Dezell, Earl R.	Minneapolis
Deziel, G.	Minneapolis
Diehl, Harold S.	Minneapolis
Diessner, H. D.	Minneapolis
Disen, C. F.	Minneapolis
Donaldson, C. A.†	Minneapolis
Dorge, Richard I.	Minneapolis
Doxey, G. L.	Minneapolis
Drake, C. R.	Minneapolis
Dreisbach, N.	Minneapolis
Dunlap, E. H.	Minneapolis
Dunn, Geo. R.	Minneapolis

†Application for Emeritus or Honorary membership not completed.

Dunn, Louis	Minneapolis	Irvine, H. G.	Minneapolis	Michael, J. C.	Minneapolis
Dunsmoor, F. A.	Minneapolis	Jackson, C. M.	Minneapolis	Michelson, H. E.	Minneapolis
Dutton, C. E.	Minneapolis	Jennings, Mary H.	Minneapolis	Miller, F. C.	Minneapolis
Dworsky, Samuel D.	Minneapolis	Jensen, Louis C.	Minneapolis	Moir, Wm. W.	Minneapolis
Egilsrud, Kristian	Minneapolis	Jensen, M. J.	Minneapolis	Monahan, R. H.	Minneapolis
Ehrenberg, C. J.	Minneapolis	Johnson, A. E.	Minneapolis	Moorhead, M. B.	Minneapolis
Eitel, Geo. D.	Minneapolis	Johnson, A. Elof.	Minneapolis	Moren, Edwin	Minneapolis
Eitel, G. G.	Minneapolis	Johnson, James A.	Minneapolis	Moriarty, Cecile R.	Minneapolis
Ellison, David E.	Minneapolis	Johnson, Julius	Minneapolis	Morrison, A. W.	Minneapolis
Erb, F. A.	Minneapolis	Johnson, Nimrod A.	Minneapolis	Murdoch, A. J.	Minneapolis
Erdmann, C. A.	Minneapolis	Johnson, Norman	Minneapolis	Murphy, Ignatius	Minneapolis
Ericson, J. G.	Minneapolis	Johnson, Odin J.	Minneapolis	Murphy, Leo	Minneapolis
Evans, Edward T.	Minneapolis	Johnson, R. A.	Minneapolis	Myers, J. A.	Minneapolis
Everlof, J. L.	Minneapolis	Johnson, Selmer M.	Minneapolis	Nathanson, M. H.	Minneapolis
Fansler, W. A.	Minneapolis	Jones, G. M.	Minneapolis	Neal, J. M.	Minneapolis
Farabaugh, Charles L.	Minneapolis	Jones, H. W.	Minneapolis	Nelson, C. P.	Minneapolis
Farr, R. E.	Minneapolis	Jones, W. A.	Minneapolis	Nelson, H. S.	Minneapolis
Feeney, John M.	Minneapolis	Joseph, Alexander	Minneapolis	Nelson, O. E.	Minneapolis
Fink, Walter H.	Minneapolis	Kennedy, C. C.	Minneapolis	Newhart, Horace	Minneapolis
Fischer, G.	Minneapolis	Kennedy, Jane F.	Minneapolis	Nippert, L. A.	Minneapolis
Fitzgerald, D.	Minneapolis	Kennedy, R. Roy	Minneapolis	Nootnagel, C. F.	Minneapolis
Fjeldstad, C. A.	Minneapolis	Kibbe, O. A.	Minneapolis	Noran, A. N.	Minneapolis
Fjellman, R. C.	Minneapolis	Kimball, H. H.	Minneapolis	Nordin, G. T.	Minneapolis
Fleming, A. S.	Minneapolis	King, E. A.	Minneapolis	Nordland, Martin	Minneapolis
Foster, W. K.	Minneapolis	King, Harry T.	Minneapolis	Noth, H. W.	Minneapolis
Fowler, L. H.	Minneapolis	King, W. R.	Minneapolis	O'Donnell, J. E.	Minneapolis
Fox, John M.	Minneapolis	Kinsella, Thomas J.	Oak Terrace	Oberg, C. M.	Minneapolis
Friedell, A.	Minneapolis	Kistler, A. J.	Minneapolis	Olson, F. A.	Minneapolis
Frudenfeld, H. H.	Minneapolis	Kistler, C. M.	Minneapolis	Olson, G. M.	Minneapolis
Funk, Victor K.	Oak Terrace	Knight, H. L.	Minneapolis	Olson, Olaf A.	Minneapolis
Gammell, J. H.	Minneapolis	Knight, Ralph T.	Minneapolis	Olson, R. G.	Minneapolis
Garand, J. H.	Dayton	Knight, Ray R.	Minneapolis	Owre, Oscar	Minneapolis
Gardner, Edwin L.	Minneapolis	Koch, John C.	Minneapolis	Parks, A. H.	Minneapolis
Gates, Russell	Minneapolis	Kohler, G. A.	Minneapolis	Patterson, W. E.	Minneapolis
Geist, Emil S.	Minneapolis	Koller, Herman M.	Minneapolis	Paulsen, E. L.	Minneapolis
Giere, E. O.	Minneapolis	Koller, L. R.	Minneapolis	Pearce, N. O.	Minneapolis
Giesler, Paul W.	Minneapolis	Kremer, Walter J.	Minneapolis	Pederson, Harold	Minneapolis
Gilles, F. L.	Minneapolis	Kriedt, Daniel	Minneapolis	Pederson, R. M.	Minneapolis
Gingold, Benjamin A.	Minneapolis	Kucera, Frank J.	Hopkins	Peppard, T. A.	Minneapolis
Goldberg, Isadore M.	Minneapolis	Kucera, Wm. J.	Minneapolis	Perry, Ralph St. J.	Minneapolis
Gordon, Geo. J.	Minneapolis	Kusske, A. L.	New Ulm	Peters, R. M.	Minneapolis
Gosin, D. F.	Minneapolis	Lajoie, John M.	Minneapolis	Petersen, J. R.	Minneapolis
Grave, Floyd	Minneapolis	Lapierre, A. P.	Minneapolis	Petersen, Thorvald	Minneapolis
Green, E. K.	Minneapolis	Lapierre, C. A.	Minneapolis	Peterson, O. H.	Minneapolis
Greene, W. P.	Minneapolis	Larson, Clarence M.	Minneapolis	Peterson, Willard C.	Minneapolis
Greisheimer, Esther M.	Minneapolis	Laurent, A. A.	Minneapolis	Petit, L. J.	Minneapolis
Gunderson, Nels A.	Minneapolis	LaVake, R. T.	Minneapolis	Petter, Charles K.	Oak Terrace
Hacking, Frank H.	Minneapolis	Law, A. A.	Minneapolis	Pettit, C. W.	Minneapolis
Hagen, G. L.	Minneapolis	Lazar, H. L.	Minneapolis	Phelps, Kenneth A.	Minneapolis
Haggard, George D.	Minneapolis	Leavitt, H. H.	Minneapolis	Pineo, W. B.	Minneapolis
Hall, J. M.	Minneapolis	Lebowske, Jos. A.	Minneapolis	Platou, E. S.	Minneapolis
Hall, S. S.	Minneapolis	Lee, H. M.	Minneapolis	Pollard, D. W.	Crosby
Hamel, Arnold L.	Minneapolis	Leland, Harold R.	Minneapolis	Polzak, Jacob A.	Minneapolis
Hamilton, A. S.	Minneapolis	Leland, M. N.	Minneapolis	Poppe, Fred H.	Minneapolis
Hamiln, George B.	Minneapolis	Lemstrom, Jarl	Minneapolis	Pratt, Fred J.	Minneapolis
Hammond, A. J.	Minneapolis	Leonard, L. J.	Minneapolis	Pratt, J. A.	Minneapolis
Hannah, Hewitt B.	Minneapolis	Lind, C. J.	Minneapolis	Preine, I. A.	Minneapolis
Hansen, Elmer H.	Minneapolis	Lindquist, R. H.	Minneapolis	Prim, J. A.	Minneapolis
Hansen, Erling	Minneapolis	Linner, H. P.	Minneapolis	Proshok, Charles E.	Minneapolis
Hansen, Olga S.	Minneapolis	List, Walter E.	Minneapolis	Quinby, Thomas F.	Minneapolis
Hanson, H. J.	Minneapolis	Litchfield, John T.	Minneapolis	Quist, H. W.	Minneapolis
Hanson, H. V.	Minneapolis	Litzenberg, J. C.	Minneapolis	Reed, Chas. A.	Minneapolis
Hare, E. R.	Minneapolis	Logefell, Rudolph C.	Minneapolis	Rees, S. P.	Minneapolis
Harrington, C. D.	Minneapolis	Long, Jesse	Minneapolis	Regnier, E. A.	Minneapolis
Harrington, F. E.	Minneapolis	Loomis, E. A.	Minneapolis	Reynolds, J. S.	Minneapolis
Hartzell, Thos. B.	Minneapolis	Lundgren, A. C.	Minneapolis	Rice, Carl O.	Minneapolis
Hastings, D. R.	Minneapolis	Lundquist, E. F.	Minneapolis	Richdorf, L. F.	Minneapolis
Hathaway, J. C.	Minneapolis	Lynch, M. J.	Minneapolis	Ridgway, Florence	Minneapolis
Haverfeld, Addie R.	Minneapolis	Lyng, John A.	Minneapolis	Rigler, Leo. G.	Minneapolis
Hayes, J. M.	Minneapolis	Lyon, E. P.	Minneapolis	Rishmiller, J. H.	Minneapolis
Head, G. D.	Minneapolis	Lyon, J. D.	Minneapolis	Rizer, R. I.	Minneapolis
Hearn, Wm. O.	Minneapolis	Lysne, Henry	Minneapolis	Roan, Carl M.	Minneapolis
Tedback, A. E.	Minneapolis	McCarthy, Donald	Minneapolis	Robb, Edwin F.	Minneapolis
Teim, Russell R.	Minneapolis	McCartney, James S.	Minneapolis	Roberts, Thos.	Minneapolis
Telk, H. H.	Minneapolis	McDaniel, Orianna	Minneapolis	Roberts, W. B.	Minneapolis
Tendrickson, J. F.	Minneapolis	McFachran, A.	Minneapolis	Robitshek, E. C.	Minneapolis
Tenry, C. E.	Minneapolis	McFarland, A. H.	Minneapolis	Rochford, W. E.	Minneapolis
Tenry, Myron O.	Minneapolis	McGandy, R. F.	Minneapolis	Rodda, F. C.	Minneapolis
Terbst, Wm. P.	Minneapolis	McGeary, Geo. E.	Minneapolis	Rodgers, C. L.	Minneapolis
Terman, Arthur L.	Minneapolis	McIntyre, George	Minneapolis	Rosen, S.	Minneapolis
Tiebert, I. P.	Minneapolis	McKinlay, C. A.	Minneapolis	Rosenberg, Maurice N.	Minneapolis
Tigbree, Paul A.	Minneapolis	McKinley, J. C.	Minneapolis	Rosenwald, R. M.	Minneapolis
Tiepins, I. H.	Minneapolis	McKinney, F. S.	Minneapolis	Rowe, Paul H.	Minneapolis
Tiebert, Funic	Minneapolis	McPheeters, H. O.	Minneapolis	Rucker, Wm. H.	Minneapolis
Hill, Eleanor J.	Minneapolis	MacDonald, A. E.	Minneapolis	Rudell, Gustave	Minneapolis
Hirschfelder, A. D.	Minneapolis	MacDonald, D. A.	Minneapolis	Sadler, William P.	Minneapolis
Hirschfeld, F. R.	Minneapolis	MacDonald, Irving C.	Minneapolis	Sawatzky, Wm. A.	Minneapolis
Joaklund, A. W.	Minneapolis	Mach, Frank B.	Minneapolis	Schaaf, F. H. K.	Minneapolis
Tobbs, C. A.	Minneapolis	Macnie, T. S.	Minneapolis	Scheldrup, N. H.	Minneapolis
Todge, S. V.	Minneapolis	Maland, C. O.	Minneapolis	Schlutz, Frederic W.	Minneapolis
Toiland, A. S.	Minneapolis	Mann, A. T.	Minneapolis	Schmitt, A. F.	Minneapolis
Tolen, T.	Minneapolis	McClay, W. J.	Minneapolis	Schmitt, S. C.	Minneapolis
Toll, P. M.	Minneapolis	Mariette, Ernest	Oak Terrace	Schneider, J. P.	Minneapolis
Tollm, Geo. A.	Minneapolis	Mark, D. B.	Minneapolis	Schussler, Otto F.	Minneapolis
Tolt, W. B.	Minneapolis	Martinson, C. J.	Wayzata	Schwartz, Virgil J.	Minneapolis
Tuenekens, E. I.	Minneapolis	Matchan, Glen R.	Minneapolis	Schwartz, Gustav	Minneapolis
Tughes, Louis D.	Minneapolis	Matthews, Justus	Minneapolis	Schwyzler, R.	Minneapolis
Tutchenison, Chas. J.	Minneapolis	Maxeiner, Stanley R.	Minneapolis	Scott, F. H.	Minneapolis
Tynes, James	Minneapolis	May, W. H.	Minneapolis	Seashore, Gilbert	Minneapolis
Tynes, John E.	Minneapolis	Mead, Marion A.	Minneapolis	Seham, Max	Minneapolis
Ueda, Kano	Minneapolis	Merkert, Charles E.	Minneapolis	Selleseth, Iver	Minneapolis
		Merkert, G. L.	Minneapolis	Sessions, John	Minneapolis
		Meyer, E. L.	Minneapolis	Shapiro, Morse J.	Minneapolis

\*Member deceased.

Application for Emeritus or Honorary membership not completed.

Simons, Jalmar.....	Minneapolis
Simpson, E. D.....	Minneapolis
Simpson, J. D.....	Minneapolis
Siperstein, D. M.....	Minneapolis
Siverstein, Andrew.....	Minneapolis
Siverstein, Ivar.....	Minneapolis
Slocumb, Maude S.....	Minneapolis
Smith, A. M.....	Minneapolis
Smith, Arthur E.....	Minneapolis
Smith, Homer R.....	Minneapolis
Smith, Norman M.....	Minneapolis
Soderlind, A.....	Minneapolis
Solhaug, S. B.....	Minneapolis
Somerheld, H. A.....	Minneapolis
Spratt, C. N.....	Minneapolis
Stewart, C. A.....	Minneapolis
Stomel, Joseph.....	Minneapolis
Strachauer, A. C.....	Minneapolis
Strout, E. S.....	Minneapolis
Strout, G. Elmer.....	Minneapolis
Sturte, J. R.....	Minneapolis
Sundt, M.....	Minneapolis
Swanson, Roy E.....	Minneapolis
Sweetser, H. B., Sr.....	Minneapolis
Sweetser, H. B., Jr.....	Minneapolis
Sweetser, Theodore.....	Minneapolis

Sweitzer, S. E.....	Minneapolis
Taft, John O.....	Minneapolis
Tanner, A. C.....	Minneapolis
Taylor, Rood.....	Minneapolis
Tennyson, Theo.....	Minneapolis
Ternstrom, O. H.....	Minneapolis
Thomas, Geo. E.....	Minneapolis
Thomas, Geo. H.....	Minneapolis
Thomas, Gilbert J.....	Minneapolis
Tingdale, A. C.....	Minneapolis
Tunstead, Hugh J.....	Minneapolis
Turnacliiff, D. D.....	Minneapolis
Tyrell, C. C.....	Minneapolis
Ude, Walter H.....	Minneapolis
Ulrich, Henry L.....	Minneapolis
Undine, Clyde A.....	Minneapolis
Voyer, Emile O.....	Minneapolis
Wahlquist, Harold F.....	Minneapolis
Waldron, Carl W.....	Minneapolis
Wanous, E. Z.....	Minneapolis
Ward, A. W.....	Minneapolis
Ward, Percy A.....	Minneapolis
Warham, T. T.....	Minneapolis
Watson, J. A.....	Minneapolis
Webb, R. C.....	Minneapolis
Weisman, S. A.....	Minneapolis

Welles, H. J.....	Minneapolis
Wethall, A. G.....	Minneapolis
Wetherby, Macnider.....	Minneapolis
Weum, T. Wm.....	Minneapolis
Whetstone, Mary S.†.....	Minneapolis
White, S. Marx.....	Minneapolis
Widen, W. F.....	Minneapolis
Wiese, H. F. B.....	Minneapolis
Wilcox, Archa E.....	Minneapolis
Wilder, Robert L.....	Minneapolis
Willcutt, Clarence.....	Minneapolis
Williams, H. L.....	Minneapolis
Williams, Robert.....	Minneapolis
Witham, C. A.....	Minneapolis
Wittich, F. W.....	Minneapolis
Wohlrahe, A. A.....	Minneapolis
Wood, Douglas F.....	Minneapolis
Woodworth, Elizabeth.....	Minneapolis
Wright, C. B.....	Minneapolis
Wright, Charles D.a.....	Minneapolis
Wright, Franklin R.....	Minneapolis
Wynne, H. M. N.....	Minneapolis
Yoerg, O. W.....	Minneapolis
Zaworski, E. A.....	Minneapolis
Zierold, A. A.....	Minneapolis

## HOUSTON-FILLMORE COUNTY MEDICAL SOCIETY

Regular meetings, not stated.

Annual meeting, October.

President	
Williams, R. V.....	Rushford
Secretary	
Helland, J. W.....	Spring Grove
Anderson, Norman E.....	Harmony
Baldwin, A. E.....	Houston
Belote, G. B.....	Caledonia

Browning, W. E.....	Caledonia
Christianson, H. W.....	Wykoff
Davis, I. Grant.....	Rushford
Drake, F. A.....	Lanesboro
Eby, C. B.....	Spring Valley
Grinnell, W. B.....	Preston
Helland, G. M.....	Spring Grove
Helland, J. W.....	Spring Grove
Lannin, J. C.....	Mabel

Nass, H. A.....	Mabel
Onsgard, C. K.....	Halstad
Onsgard, L. K.....	Houston
Palmer, R. N.....	Lanesboro
Tierney, C. M.....	Granger
Williams, R. V.....	Rushford
Wilson, R. H.....	Harmony
Woodruff, C. W.....	Chatfield

## KANDIYOHI-SWIFT COUNTY MEDICAL SOCIETY

Regular meetings, at call of President.

Annual meeting, at call of President.

President	
Branton, A. F.....	Willmar
Secretary	
Scotfield, C. L.....	Benson
Anderson, R. E.....	Atwater
Behmler, Fred W.....	Appleton

Branton, A. F.....	Willmar
Branton, B. J.....	Willmar
Daignault, Oscar.....	Benson
Davison, P. C.....	Willmar
Dowswell, W. J.....	Kerkhoven
Frederickson, Alice C.....	Lake Lillian
Frederickson, Guy V. Y.....	Lake Lillian
French, H. S.....	New London
Fiksdal, M. J.....	Willmar

Frost, E. H.....	Willmar
Hodapp, R. J.....	Willmar
Jacobs, Jno. C.....	Willmar
Johnson, Hans.....	Kerkhoven
Kaufman, Wm. C.....	Appleton
Rains, J. M.....	Willmar
Scotfield, C. L.....	Benson
Thompson, Arthur.....	Raymond

## LYON-LINCOLN COUNTY MEDICAL SOCIETY

Regular meetings, second Tuesdays.

Annual meeting, October 11, 1927.

President	
Gray, F. D.....	Marshall
Secretary	
Workman, H. M.....	Tracy
Akester, Ward.....	Marshall
Bossingham, O. N.....	Lake Benton
Chorest, J. C. R.....	Marshall

Engh, Sigfred.....	Cottonwood
Ford, Burton C.....	Marshall
Germo, Chas.....	Balaton
Gray, F. D.....	Marshall
Hermanson, Peter E.....	Ivanhoe
Hoidale, A. D.....	Tracy
Jacquot, G. L.....	Marshall
Nelson, L. E.....	Hendricks

Persons, C. E.....	Marshall
Robertson, J. B.....	Cottonwood
Sanderson, E. T.....	Minneota
Thordarson, Theo.....	Minneota
Vadheim, A. L.....	Tyler
Valentine, W. H.....	Tracy
Workman, H. M.....	Tracy
Workman, W. G.....	Tracy

## MCLEOD COUNTY MEDICAL SOCIETY

Regular meetings, no regular dates.

Annual meeting, no definite time set.

President	
Trutna, Thos. J.....	Silver Lake
Secretary	
Jensen, A. H.....	Hutchinson
Axilrod, D. L.....	Hutchinson
Clement, J. B.....	Lester Prairie

Crow, E. R.....	Minneapolis
Holm, H. H.....	Glencoe
Hutterer, Edw. G.....	Winsted
Jenson, A. H.....	Hutchinson
Klima, W. W.....	Stewart
Kohler, F. G.....	Minneapolis
Langhoff, A. H.....	Glencoe

Sahr, W. G.....	Hutchinson
Schmidt, W. R.....	Glencoe
Scholpp, O. W.....	Hutchinson
Sheppard, Fred.....	Hutchinson
Sheppard, P. E.....	Hutchinson
Trutna, Thos. J.....	Silver Lake
Weissgerber, L. A.....	Brownston

## MEEKER COUNTY MEDICAL SOCIETY

Regular meetings, May, August and October.

Annual meeting, December.

President	
Brigham, Frank.....	Watkins
Secretary	
Danielson, K. A.....	Litchfield

Brigham, Frank.....	Watkins
Danielson, K. A.....	Litchfield
Dulude, S. S.....	Dassel
O'Connor, D. C.....	Eden Valley

Peterson, Alfred.....	Dassel
Robertson, A. W.....	Litchfield
Robertson, W. P.....	Litchfield
Wilmot, H. E.....	Litchfield

†Application for Emeritus or Honorary membership not completed.

## MOWER COUNTY MEDICAL SOCIETY

Regular meetings, last Thursday of each month.

Annual meeting, last Thursday in November.

President	
Melzer, G. R.	Lyle
Treasurer	
Henslin, A. E.	Le Roy
Allen, Chas. C.	Austin
Cobb, Willis F.	Lyle
Coleman, F. B.	Austin

Grise, W. B.	Austin
Hegge, C. A.	Austin
Hegge, O. H.	Austin
Henslin, A. E.	LeRoy
Hertel, G. E.	Austin
Leck, Clifford C.	Austin
Lewis, Charles F.	Austin
Lommen, P. A.	Austin

McKenna, J. K.	Austin
Melzer, G. R.	Lyle
Mitchell, R. S.	Grand Meadow
Morrow, James J.	Austin
Morse, M. P.	LeRoy
Rebman, E. C.	Austin
Sheedy, Chester L.	Austin
Torkelson, P. T.	Lyle

## NICOLLET-LE SUEUR COUNTY MEDICAL SOCIETY

Regular meetings, September and December.

Annual meeting, December.

President	
Hewson, Wilfred J.	Stillwater
Secretary	
Daniels, J. W.	St. Peter
Watkins, H. B.	Le Sueur Center
Lowell, W. W.	St. Peter

Daniels, J. W.	St. Peter
Dodge, F. A.	Le Sueur
Eriley, Clara S. Y.	Mt. Pleasant, Ia.
Ericson, Swan	Le Sueur
Freeman, G. H.	St. Peter
Hewson, Wilfred J.	Stillwater
Holtan, Theodore	Waterville

Lenander, Melvin E.	St. Peter
LeClerc, J. E.	Le Sueur
McKeon, J. O.	Montgomery
Norris, J. F.	St. Peter
Phelps, R. M.	Faribault
Smith, B. F.	St. Peter
Strathern, F. P.	St. Peter

## OLMSTED COUNTY MEDICAL SOCIETY

Regular meetings, second Wednesday in April, June, September and December.

Annual meeting, December 21.

President	
Mussey, R. D.	Rochester

Secretary	
Wiper, M. C.	Rochester

Adams, S. Franklin	Rochester
Anderson, A. W.	Rochester
Ellan, Frank N.	Rochester
Allen, Edgar V.	Rochester
Allen, Roy W.	Rochester
Allen, W. A.	Rochester
Avarez, Walter C.	Rochester
Amberg, Samuel	Rochester
Anderson, C. M.	Rochester
Anderson, E. W.	Rochester
Anderson, Mark J.	Rochester
Alfour, D. C.	Rochester
Amnick, Edwin G.	Rochester
Arborka, C. J.	Rochester
Argen, J. Arnold	Rochester
Arker, Nelson W.	Rochester
Arnes, A. R.	Rochester
Aumgartner, Conrad J.	Rochester
Baxter, Geoffrey H.	Rochester
Bayha, Carl H.	Rochester
Beach, Watson	Rochester
Benedict, W. L.	Rochester
Berkman, D. M.	Rochester
Binger, Melvin W.	Rochester
Blackford, Launcelot M.	Rochester
Biss, John H.	Rochester
Bodine, Marc W.	Rochester
Bonta, M. B.	Rochester
Boothby, W. M.	Rochester
Bowing, H. H.	Rochester
Bowles, John H.	Rochester
Brasch, Wm. F.	Rochester
Bratrud, E. J.	Rochester
Brookbank, Thos. Wm.	Rochester
Broders, A. C.	Rochester
Brown, A. E.	Rochester
Brown, Felix M.	Rochester
Brown, G. E.	Rochester
Brown, P. W.	Rochester
Brunsting, Louis A.	Rochester
Bue, L. A.	Rochester
Bumpus, H. C.	Rochester
Buntin, William A.	Rochester
Busby, James L.	Rochester
Caylor, Harold D.	Rochester
Cumley, Charles L.	Rochester
Comfort, Mandred W.	Rochester
Conner, H. M.	Rochester
Corbille, Catherine	Rochester
Craig, Wm. McK.	Rochester
Crane, Jacob F.	Rochester
Crenshaw, J. L.	Rochester
Crew, J. E.	Rochester
Daniels, Harry A.	Rochester
Davis, Austin C.	Rochester
Davis, John D.	Rochester
Dean, Benjamin F.	Rochester

De Carle, Donald W.	Rochester
Decker, Walter J.	Rochester
Desjardins, Arthur U.	Rochester
Ditmore, David C.	Rochester
Dixon, Claude F.	Rochester
Dixon, Robert K.	Rochester
Dolder, F. C.	Eyota
Doyle, J. B.	Rochester
Drips, D. G.	Rochester
Dunlap, H. F.	Rochester
Etheredge, Shuler H.	Rochester
Eubanks, George F.	Rochester
Eusterman, G. B.	Rochester
Everts, Arrah B.	Rochester
Faust, Louis S.	Rochester
Fawcett, C. E.	Stewartville
Fehland, Harold R.	Rochester
Figi, F. A.	Rochester
Finney, W. P., Jr.	Rochester
Fishback, Frederick C.	Rochester
Flothow, Paul G.	Rochester
Ford, Frances A.	Rochester
Fortin, Harry J.	Rochester
Foster, Wilnot C.	Rochester
Fox, Ben	Rochester
Frederickson, Clyde H.	Rochester
Gaarde, F. W.	Rochester
Gay, James G.	Rochester
Giffin, H. Z.	Rochester
Gleason, Notery A.	Rochester
Goeckerman, W. H.	Rochester
Good, Louis P.	Rochester
Good, Ralph W.	Rochester
Gorder, Arne C.	Rochester
Graham, A. Stephens	Rochester
Green, George F.	Rochester
Greene, Carl H.	Rochester
Greene, Earle I.	Rochester
Greenlee, Daniel P.	Rochester
Grier, James P.	Rochester
Habein, Harold C.	Rochester
Hager, Benjamin H.	Rochester
Haines, S. F.	Rochester
Haldean, Keene O.	Rochester
Hallenbeck, D. F.	Rochester
Hamrick, Robert A.	Rochester
Hand, John R.	Rochester
Hane, Richard L.	Rochester
Hanlon, Frank R.	Rochester
Harrington, Ethel R.	Rochester
Harrington, S. W.	Rochester
Hartman, H. R.	Rochester
Hartwell, Shattuck W.	Rochester
Hartzell, John B.	Rochester
Hauser, Emil D.	Rochester
Havens, Fred Z.	Rochester
Heck, Frank J.	Rochester
Heimdal, Clarence O.	Rochester
Helmholz, H. F.	Rochester
Hempstead, B. E.	Rochester
Hench, Philip S.	Rochester
Henderson, Earl F.	Rochester
Henderson, M. S.	Rochester

Herrmann, S. F.	Rochester
Heyerdale, O. C.	Rochester
Holloway, Jackson K.	Rochester
Horton, Bayard T.	Rochester
Horwitz, Alec	Rochester
Huffman, Lester D.	Rochester
Hunt, V. C.	Rochester
Jacobs, Minerd F.	Rochester
Johnson, Walter R.	Rochester
Jones, H. T.	Rochester
Jones, Robert D.	Rochester
Jordan, Elverse M.	Rochester
Jordan, Ferdinand M.	Rochester
Joyce, G. T.	Rochester
Judd, E. S.	Rochester
Keith, N. M.	Rochester
Kennedy, Roger L. J.	Rochester
Kepler, E. J.	Rochester
Kepler, Helen M.	Rochester
Kernohan, James W.	Rochester
Kestel, John L.	Rochester
Kilbourne, A. F.	Rochester
Kleinheksel, John L.	Rochester
Leddy, Eugene T.	Rochester
Lemon, W. S.	Rochester
Lillie, H. I.	Rochester
Lillie, W. I.	Rochester
Linton, W. B.	Rochester
Logan, A. H.	Rochester
Luden, Georgine	Rochester
Lundy, John S.	Rochester
McCann, James C.	Rochester
McCuskey, Charles F.	Rochester
McKaig, Carl B.	Pine Island
McKeithen, A. M.	Rochester
McNaughton, William McM.	Rochester
McQuiggan, Mark R.	Rochester
McVicar, Chas. S.	Rochester
Magath, T. B.	Rochester
Malmgren, George E.	Rochester
Marshall, James M.	Rochester
Masson, D. M.	Rochester
Masson, J. C.	Rochester
Mattson, Hamline	Rochester
May, James A.	Rochester
Mayo, C. H.	Rochester
Mayo, Charles W.	Rochester
Mayo, W. J.	Rochester
Maytum, Charles K.	Rochester
Metheny, David	Rochester
Meyerding, H. W.	Rochester
Miller, Charles D.	Rochester
Mills, Ralph G.	Rochester
Moench, L. Mary	Rochester
Moersch, E. P.	Rochester
Moersch, H. J.	Rochester
Montgomery, Hamilton	Rochester
Moore, A. B.	Rochester
Moore, Thomas B.	Rochester
Mussey, R. D.	Rochester
Nagel, G. W.	Rochester
Nelson, Marque O.	Rochester
New, G. B.	Rochester

Application for Emeritus or Honorary membership not completed.

Nickel, Allen A. C. .... Rochester  
 Nomland, Ruben. .... Rochester  
 Norton, Manville W. .... Rochester  
 Nunn, Leslie L. .... Eveleth  
 Nutting, Roland E. .... Rochester  
 O'Leary, P. A. .... Rochester  
 Ochsner, Harold C. .... Rochester  
 Offutt, Susan R. .... Rochester  
 Ohlinger, L. B. .... Rochester  
 Olson, Ernest A. .... Pine Island  
 Palmer, B. M. .... Rochester  
 Parker, H. L. .... Rochester  
 Parson, Geo. W. .... Rochester  
 Parsons, Eloise. .... Rochester  
 Passalacqua, Luis A. .... Rochester  
 Pemberton, J. de J. .... Rochester  
 Perry, Clarence L. .... Rochester  
 Peterson, Joel A. .... Rochester  
 Piper, M. C. .... Rochester  
 Plankers, A. G. .... Dubuque, Iowa  
 Plummer, H. S. .... Rochester  
 Plummer, W. A. .... Rochester  
 Pollock, L. W. .... Rochester  
 Pope, Charles E. .... Rochester  
 Prangen, A. D. .... Rochester  
 Prickman, Louis E. .... Rochester  
 Prout, Curtis T. .... Rochester  
 Pugliese, Frank M. .... Rochester  
 Quale, Victor S. .... Rochester  
 Radtke, H. P. .... Rochester  
 Randall, Lawrence M. .... Rochester

Rankin, F. W. .... Rochester  
 Rentschler, Calvin B. .... Rochester  
 Rentschler, Edwin B. .... Rochester  
 Rieniets, John H. .... Rochester  
 Rivers, A. B. .... Rochester  
 Robertson, H. E. .... Rochester  
 Rohwer, Christian J. .... Cleveland, Ohio  
 Rosenow, E. C. .... Rochester  
 Rowntree, L. G. .... Rochester  
 Rucker, Charles W. .... Rochester  
 Sager, William W. .... Rochester  
 Sanford, A. H. .... Rochester  
 Schmitt, Earl O. G. .... Rochester  
 Schulz, Irwin. .... Rochester  
 Shafter, Royce R. .... Rochester  
 Sheldon, W. D. .... Rochester  
 Shippey, Stuart H. .... Rochester  
 Shugrue, John Joseph. .... Rochester  
 Simon, Harold E. .... Rochester  
 Sistrunk, W. E. .... Rochester  
 Smith, F. L. .... Rochester  
 Smith, Harry L. .... Rochester  
 Smith, Leonard M. .... Rochester  
 Smith, Newton D. .... Rochester  
 Smith, William M. .... Rochester  
 Snell, Albert M. .... Rochester  
 Squire, Fay H. .... Rochester  
 Stacy, L. J. .... Rochester  
 Stark, W. B. .... Rochester  
 Stephens, Brooks P. .... Rochester  
 Steven, Geo. .... Byron

Stuhler, Louis G. .... Rochester  
 Sutherland, C. G. .... Rochester  
 Synhorst, Alfred P. .... Rochester  
 Thomas, Lester C. .... Rochester  
 Thompson, Gershom J. .... Rochester  
 Thompson, H. L. .... Rochester  
 Tinkness, Donald E. .... Rochester  
 Vickery, Eugene B. .... Rochester  
 Viccelli, James D. .... Rochester  
 Vinson, P. P. .... Rochester  
 von Lackum, W. H. .... Rochester  
 Vories, Ruth E. .... Rochester  
 Wagener, H. P. .... Rochester  
 Walters, H. W. .... Rochester  
 Weber, H. M. .... Rochester  
 Weir, J. F. .... Rochester  
 Wellbrock, William L. .... Rochester  
 Wheeler, Theodora. .... Rochester  
 White, Robert B. .... Rochester  
 Whitten, Merritt B. .... Rochester  
 Wickham, Mont. C. .... Rochester  
 Wilder, R. M. .... Rochester  
 Wilhelmj, Charles M. .... Rochester  
 Williams, Henry L., Jr. .... Rochester  
 Williams, Thomas B. .... Rochester  
 Willius, F. A. .... Rochester  
 Wilson, L. B. .... Rochester  
 Woltman, H. W. .... Rochester  
 Wood, H. G. .... Rochester  
 Yater, Wallace M. .... Rochester  
 Ziegler, Lloyd H. .... Rochester

#### PARK REGION DISTRICT AND COUNTY MEDICAL SOCIETY

Douglas, Grant, Otter Tail, and Wilkin Counties.

Regular meetings, second Wednesday in January, April, July and October.

Annual meeting, second Wednesday in October.

President  
 Lee, W. A. .... Fergus Falls  
 Secretary  
 Satersmoen, Theo. .... Pelican Rapids  
 Baker, A. C. .... Fergus Falls  
 Blakey, A. R. .... Osakis  
 Boysen, Peter. .... Pelican Rapids  
 Brabec, P. F. .... Perham  
 Brabec, F. J. .... Perham  
 Broker, W. S. .... Battle Lake  
 Burnap, W. L. .... Fergus Falls  
 Cowing, P. G. .... Evansville

Drought, W. W. .... Fergus Falls  
 Esser, John. .... Pernam  
 Estrem, C. O. .... Fergus Falls  
 Freeborn, J. A. .... Fergus Falls  
 Hand, W. R. .... Elbow Lake  
 Haskell, A. D. .... Alexandria  
 Heiberg, E. A. .... Fergus Falls  
 Kierland, P. E. .... Alexandria  
 Kittelson, T. N. .... Fergus Falls  
 Lee, W. A. .... Fergus Falls  
 Leibold, H. H. .... Parkers Prairie  
 Lewis, A. J. .... Henning  
 Love, Fred A. .... Carlos

Meckstroth, C. W. .... Brandon  
 Meland, Ernest. .... Dalton  
 Nelson, O. N. .... Battle Lake  
 Nelson, Wallace I. .... Underwood  
 Otto, H. C. .... Frazee  
 Parson, L. R. .... Elbow Lake  
 Patterson, W. L. .... Fergus Falls  
 Paulson, T. S. .... Fergus Falls  
 Satersmoen, Theo. .... Pelican Rapids  
 Sherping, O. Th. .... Fergus Falls  
 Tanquist, E. J. .... Alexandria  
 Vail, James B. .... Henning  
 Wray, W. E. .... Campbell

#### RAMSEY COUNTY MEDICAL SOCIETY

Regular meetings, last Monday of month except June, July, and August.

Annual meeting, last Monday of January.

President  
 Jones, E. M. .... St. Paul  
 Secretary  
 Schulze, Albert G. .... St. Paul  
 Abbott, J. S. .... St. Paul  
 Ahrens, A. E. .... St. Paul  
 Ahrens, A. H. .... St. Paul  
 Alberts, Max W. .... St. Paul  
 Alden, J. F. .... St. Paul  
 Aldes, Harry. .... St. Paul  
 Alexander, F. H. .... St. Paul  
 Allen, Mason. .... St. Paul  
 Arends, A. L. .... St. Paul  
 Armstrong, J. M. .... St. Paul  
 Arnquist, A. S. .... St. Paul  
 Arouni, Khalil. .... St. Paul  
 Arzt, C. P. .... St. Paul  
 Aurelius, J. Richards. .... St. Paul  
 Ausman, Carl F. .... St. Paul  
 Bacon, Donald K. .... St. Paul  
 Bacon, Knox. .... San Diego, Calif.  
 Bacon, L. C. .... St. Paul  
 Balcome, F. E. .... St. Paul  
 Ball, C. R. .... St. Paul  
 Barry, L. W. .... St. Paul  
 Barsness, Nellie. .... St. Paul  
 Beadie, W. D. .... Cannon Falls  
 Beals, Hugh. .... St. Paul  
 Bell, C. C. .... St. Paul  
 Benepe, L. M. .... St. Paul  
 Bennion, P. H. .... St. Paul  
 Bentley, Norman P. .... St. Paul  
 Berrisford, Paul D. .... St. Paul  
 Binger, H. E. .... St. Paul  
 Birnberg, T. L. .... St. Paul  
 Bock, R. A. .... St. Paul

Boeckmann, Egil. .... St. Paul  
 Bohland, E. H. .... St. Paul  
 Bole, R. S. .... St. Paul  
 Bolstad, H. C. .... St. Paul  
 Borg, Joseph F. .... St. Paul  
 Bouma, L. R. .... St. Paul  
 Brand, G. D. .... St. Paul  
 Bray, E. R. .... St. Paul  
 Brimhall, J. B. .... St. Paul  
 Brodie, Walter D. .... St. Paul  
 Brooks, D. F. .... St. Paul  
 Brooks, G. F. .... St. Paul  
 Brown, Ed. I. .... St. Paul  
 Brown, John C. .... St. Paul  
 Brown, S. E. .... St. Paul  
 Burch, F. E. .... St. Paul  
 Burfiend, G. H. .... St. Paul  
 Burns, F. W. .... St. Paul  
 Burns, R. M. .... St. Paul  
 Burton, Carl G. .... St. Paul  
 Busher, H. .... St. Paul  
 Caldwell, Jas. P. .... St. Paul  
 Caldwell, Kenneth S. .... St. Paul  
 Cameron, J. A. .... St. Paul  
 Campbell, J. E. .... South St. Paul  
 Cannon, Harry. .... St. Paul  
 Carman, C. L. .... St. Paul  
 Carman, Paul I. .... St. Paul  
 Carroll, Wm. C. .... St. Paul  
 Carter, Fred G. .... St. Paul  
 Cavanaugh, J. O. .... St. Paul  
 Chatterton, C. C. .... St. Paul  
 Christiansen, A. .... St. Paul  
 Christison, J. T. .... St. Paul  
 Clark, T. C. .... Minneapolis  
 Colby, Woodard. .... St. Paul  
 Cole, Wallace W. .... St. Paul  
 Collic, H. G. .... St. Paul

Colvin, A. R. .... St. Paul  
 Comstock, A. E. .... St. Paul  
 Conner, Wm. H. .... Minneapolis  
 Connor, C. E. .... St. Paul  
 Cook, Paul B. .... St. Paul  
 Countryman, Roger S. .... St. Paul  
 Cowern, E. W. .... North St. Paul  
 Critchfield, L. R. .... St. Paul  
 Crump, J. W. .... St. Paul  
 Culligan, J. M. .... St. Paul  
 Dack, Lloyd G. .... St. Paul  
 Darling, J. B. .... St. Paul  
 Daugherty, E. B. .... St. Paul  
 Daugherty, L. E. .... St. Paul  
 Davis, Herbert. .... St. Paul  
 Davis, William. .... St. Paul  
 Dedolph, Karl. .... St. Paul  
 Derauf, B. I. .... St. Paul  
 Dickson, Thos. H., Jr. .... St. Paul  
 Dittman, Geo. C. .... St. Paul  
 Dohm, A. J. .... St. Paul  
 Donohue, P. F. .... St. Paul  
 Drake, Carl B. .... St. Paul  
 Dunn, J. N. .... St. Paul  
 Dunne, Gerald P. .... St. Paul  
 Earl, George A. .... St. Paul  
 Earl, Robert O. .... St. Paul  
 Edlund, G. .... St. Paul  
 Ely, O. S. .... South St. Paul  
 Emerson, E. C. .... St. Paul  
 Endress, E. K. .... St. Paul  
 Engberg, E. J. .... St. Paul  
 Ernest, G. C. .... St. Paul  
 Esheley, E. C. .... St. Paul  
 Fahey, E. W. .... St. Paul  
 Ferguson, J. C. .... St. Paul  
 Fesler, Harold H. .... St. Paul  
 Flagstad, A. E. .... St. Paul

Fogarty, Chas. W.	St. Paul	Kvitrud, G.	St. Paul	Rogers, John T.	St. Paul
Foley, F. E. B.	St. Paul	Langenderfer, F. V.	St. Paul	Rosenholtz, Burton	St. Paul
Freeman, C. D.	St. Paul	Larsen, C. L.	St. Paul	Rosenthal, Robert	St. Paul
Fulton, J. F.	St. Paul	Larson, M. L.	St. Paul	Rothrock, J. L.	St. Paul
Gager, E. C.	St. Paul	Lax, Morris H.	St. Paul	Rothschild, H. J.	St. Paul
Garbrecht, Arthur	St. Paul	Lehy, Bartholomew	St. Paul	Roy, Philemon	St. Paul
Gardiner, D. G.	St. Paul	Leavenworth, Richard O.	St. Paul	Ruhberg, George N.	St. Paul
Geer, Everett K.	St. Paul	Leitch, Archibald	St. Paul	Rumpf, William H.	Minneapolis
Gehlen, J. N.	St. Paul	Leonard, Gilbert J.	St. Paul	Rutherford, W. C.	St. Paul
Geissinger, John D.	St. Paul	Lepak, John A.	St. Paul	Ryan, John J.	St. Paul
Geist, George A.	St. Paul	Lerche, William	St. Paul	Ryan, Mark E.	St. Paul
Ghent, C. Harry	St. Paul	Lewis, W. W.	St. Paul	Satterlund, Victor	St. Paul
Ghent, M. M.	St. Paul	Lick, C. Louis	St. Paul	Savage, F. J.	St. Paul
Gillfillan, J. S.	St. Paul	Light, S. E.	St. Paul	Schoch, R. B.	St. Paul
Ginsberg, Wm.	St. Paul	Little, W. J.	St. Paul	Schons, E.	St. Paul
Goltz, E. V.	St. Paul	Lowe, Earl R.	South St. Paul	Schuldt, F. C.	St. Paul
Gratzek, Thos.	St. Paul	Lowe, Thomas	South St. Paul	Schulze, Albert G.	St. Paul
Greene, Charles L.	St. Paul	Lund, Arthur E.	St. Paul	Schwyzner, Arnold	St. Paul
Gruenhagen, Arnold P.	St. Paul	Lundholm, A. M.	St. Paul	Senkler, G. E.	St. Paul
Guyer, L. G.	Staten Island, New York	McBeath, Ewing C.	New York City	Setzer, G. W.	Helena, Mont.
Hagaman, Geo. K.	St. Paul	McCarthy, W. R.	St. Paul	Setzer, H. J.	St. Paul
Hall, A. R.	St. Paul	McClanahan, J. H.	White Bear	Shannon, W. Roy	St. Paul
Hall, Henry H.	St. Paul	McClanahan, J. S.	White Bear	Shellman, John L.	St. Paul
Halper, Philip	St. Paul	McCloud, C. N.	St. Paul	Shillington, M. A.	St. Paul
Hammes, E. M.	St. Paul	McKeon, Owen	St. Paul	Simon, B. F.	St. Paul
Hammond, J. F.	St. Paul	McLaren, Jeanette M.	St. Paul	Skinner, H. O.	St. Paul
Harmon, G. E.	St. Paul	McNevin, C. F.	St. Paul	Snyder, G. W.	St. Paul
Hartfiel, Wm. F.	St. Paul	Martineau, J. L.	St. Paul	Sohlberg, Olof	St. Paul
Hartley, E. C.	St. Paul	Meyerding, E. A.	St. Paul	Souster, B. B.	St. Paul
Hauser, V. P.	St. Paul	Miles, L. M.	St. Paul	Sprafka, J. M.	St. Paul
Hawkins, V. J.	St. Paul	Mitchell, Frederick	St. Paul	Sterner, E. G.	St. Paul
Heath, A. C.	St. Paul	Mogilner, S. N.	St. Paul	Sterner, O. W.	St. Paul
Heck, Wm. W.	St. Paul	Molander, H. A.	St. Paul	Stevens, F. A.	Lake Elmo
Hedenstrom, F. G.	St. Paul	Moquin, Marie A.	St. Paul	Stewart, Alexander	St. Paul
Hengstler, W. H.	St. Paul	Morrissey, F. B.	St. Paul	Stierle, Adolph, Jr.	St. Paul
Hensel, C. N.	St. Paul	Mortenson, N. G.	St. Paul	Stinnette, S. E.	St. Paul
Herrmann, Edgar T.	St. Paul	Moskovitz, Selic	St. Paul	Stolpestad, H. L.	St. Paul
Hesselgrave, S. S.	St. Paul	Moss, Myer N.	St. Paul	Swanson, Edwin O.	St. Paul
Hilger, A. W.	St. Paul	Moynihan, T. J.	St. Paul	Swanson, John A.	St. Paul
Hilger, D. D.	St. Paul	Muller, R. Theo.	St. Paul	Sweeney, Arthur	St. Paul
Hilger, L. A.	St. Paul	Myers, Thos.	St. Paul	Swenson, J. J.	St. Paul
Hiniker, Louis P.	St. Paul	Neher, F. H.	St. Paul	Taylor, H. L.	St. Paul
Hochfilzer, J. J.	St. Paul	Nelson, L. A.	St. Paul	Teisberg, C. B.	St. Paul
Hoff, Alfred	St. Paul	Nesbit, Harold T.	St. Paul	Tiber, L. J.	St. Paul
Hoffman, Max H.	St. Paul	Nippert, H. T.	St. Paul	Tregilgas, H. R.	South St. Paul
Holcomb, J. T.	St. Paul	Nordin, C. G.	St. Paul	Van Slyke, Chas. A.	St. Paul
Holcomb, O. W.	St. Paul	Norris, Edgar H.	St. Paul	Van der Weyer, Wm.	St. Paul
Howard, W. S.	St. Paul	Nye, Katherine A.	St. Paul	Waas, Charles W.	St. Paul
Hultkrans, Joel C.	St. Paul	Nye, Lillian L.	St. Paul	Walker, R. E.	St. Paul
Hunt, H. E.	St. Paul	O'Brien, H. J.	St. Paul	Wallinga, John H.	St. Paul
Ide, A. W.	St. Paul	O'Connor, I. A.	St. Paul	Warnock, R. W.	St. Paul
Johnson, Asa M.	St. Paul	O'Connor, J. P.	St. Paul	Warren, E. L.	St. Paul
Johnson, Hartland C.	St. Paul	Oerting, Harry	St. Paul	Warwick, Margaret	St. Paul
Johnson, Ray G.	St. Paul	Ogden, Warner	St. Paul	Webber, Fred L.	St. Paul
Johnson, T. H.	St. Paul	Ohage, Justus	St. Paul	Welch, M. C.	St. Paul
Jones, D. C.	St. Paul	Ohage, Justus, Jr.	St. Paul	Werner, O. S.	St. Paul
Jones, E. M.	St. Paul	Olson, Chas. A.	St. Paul	Wheeler, M. W.	St. Paul
Kadecky, David	St. Paul	Ostergren, E. W.	St. Paul	Whitacre, J. C.	St. Paul
Kamman, Gordon R.	St. Paul	Pearson, F. R.	St. Paul	Whitcomb, Ed. H.	St. Paul
Kannary, E. L.	St. Paul	Pedersen, A. H.	St. Paul	White, J. S.	St. Paul
Kelly, John V.	St. Paul	Penny, L. E.	St. Paul	Whitmore, F. W.	St. Paul
Kelly, Paul H.	St. Paul	Perry, C. G.	St. Paul	Whitney, A. W.	St. Paul
Kennedy, W. A.	St. Paul	Peterson, V. N.	St. Paul	Williams, Clayton	St. Paul
Kenny, H. F.	St. Paul	Plondke, F. J.	St. Paul	Williamson, George A.	St. Paul
Kesting, Herman	St. Paul	Prendergast, H. J.	St. Paul	Wold, K. C.	St. Paul
King, George L.	St. Paul	Ramsey, W. R.	St. Paul	Winnick, J. B.	St. Paul
King, Z. P.	St. Paul	Richards, E. T. F.	St. Paul	Wolfe, H. H.	St. Paul
Kistler, A. S.	St. Paul	Richardson, Harold E.	St. Paul	Ylvisaker, L. S.	St. Paul
Klein, H. N.	St. Paul	Riggs, C. E.	St. Paul	Zander, C. H.	St. Paul
Knauff, M. K.	St. Paul	Ritchie, H. P.	St. Paul	Zimmermann, H. B.	St. Paul

## RED RIVER VALLEY MEDICAL SOCIETY

Kittson, Mahnomen, Marshall, Norman, Pennington, Polk,  
Red Lake and Roseau Counties.

Regular meetings, April, September and December.

Annual meeting, second Tuesday in December.

President					
Norman, J. F.	Crookston	Delmore, J. L.	Roseau	Morley, G. A.	Crookston
Secretary		Dunlop, Alex	Crookston	Nelson, H. E.	Crookston
Oppegaard, M. O.	Crookston	Edstrom, Henry	Crookston	Nerad, Anton H.	Argyle
Adkins, C. M.	Grygla	Engstrand, Oscar J.	Warren	Norman, J. F.	Crookston
Anderson, J. K.	Crookston	Erickson, J. L.	Twin Valley	Ohnstad, J. L.	McIntosh
Anderson, W. S.	Minneapolis	Fried, Louis A.	Fosston	Oppegaard, C. L.	Crookston
Bernard, B. C.	Thief River Falls	Froehlich, H. W.	Thief River Falls	Oppegaard, M. O.	Crookston
Bertelson, O. L.	Crookston	Griffin, P. J.	Fertile	Overend, K. V.	Hallock
Biedermann, Jacob	Thief River Falls	Hansen, M.	Ada	Roy, J. A.	Red Lake Falls
Blegen, H. M.	Warren	Henney, Wm. H.	McIntosh	Sather, Allen	Fosston
Borreson, Baldwin	Remer	Hodgson, H. H.	Crookston	Shaleen, A. W.	Hallock
Bowers, J. T.	Thief River Falls	Hollands, W. H.	Fisher	Shedlov, A.	Fosston
Bratrud, O. Edward	Warren	Holmes, W. B.	Ada	Shelland, J. T.	Ada
Bratrud, Theodor	Warren	Holte, H.	Crookston	Stratte, J. J.	Hallock
Brousseau, J. E.	Argyle	Kahala, Arthur	Crookston	Swendenberg, A. W.	Thief River Falls
Brown, Lyle L.	Crookston	Kirk, G. P.	East Grand Forks	Turnbull, Robert	Fosston
Dahlquist, G. W.	Lancaster	Larson, A. L.	Fertile	Vistaunet, P. S.	Shelly
Dean, Arthur C.	Crookston	Leitch, N. M.	Warroad	Watson, N. M.	Red Lake Falls
		Locken, O. E.	Crookston	Wattam, G. S.	Warren
		Melby, O. F.	Thief River Falls	Wilstrout, I. Geo.	Oslo
		Mercil, Wm. F.	Crookston		

†Application for Emeritus or Honorary membership not completed.

## REDWOOD-BROWN COUNTY MEDICAL SOCIETY

Regular meetings, upon call of President.

Annual meeting, June.

Acting President	
Weiser, Geo. B.	New Ulm
Secretary	
Meierding, Wm. A.	New Ulm
Adams, J. L.	Morgan
Dubbe, F. H.	New Ulm
Eckstein, A. W.	Comfrey
Fritsche, Albert	New Ulm
Fritsche, L. A.	New Ulm

Goblirsh, A. P.	Sleepy Eye
Hammermeister, Theodore F.	New Ulm
Jamieson, Earl	Walnut Grove
Kiefer, M. A.	Sleepy Eye
Kolset, Carl D.	Sanborn
Madden, John F.	Gibbon
Meierding, Wm. A.	New Ulm
Pederson, O. J.	Hanska
Peterson, R. A.	Vesta
Reineke, George F.	New Ulm
Rothenburg, J. C.	Springfield

Saffert, Cornelius A.	New Ulm
Schoch, J. L.	New Ulm
Seifert, Otto J.	New Ulm
Shrader, J. S.	Springfield
Strickler, Mary	Sleepy Eye
Vogel, Joseph	New Ulm
Vogel, Melvin A.	Minneapolis
Weiser, Geo. B.	New Ulm
Wellcome, J. W. B.	Sleepy Eye
Wohlrahe, Clarence F.	Springfield
Wohlrahe, E. J.	Springfield

## RICE COUNTY MEDICAL SOCIETY

Annual meeting, December.

President	
Smith, P. A.	Faribault
Secretary	
Plonske, C. J.	Faribault
Babcock, F. M.	Northfield
Backe, Edmond	Kenyon
Beede, Ethel R.	Faribault
Davis, F. U.	Faribault
Dungay, Neil S.	Northfield
Francis, David W.	Morristown

Haessly, S. B.	Faribault
Hanson, A. M.	Faribault
Haskins, John L.	Northfield
Haynes, A. L.	Faribault
Huxley, F. R.	Faribault
Kanne, C. W.	Faribault
Lee, W. P.	Northfield
Lexa, F. J.	Lonsdale
McBroom, D. E.	Faribault
Mayland, M. L.	Faribault
Meyer, P. F.	Faribault
Moses, Joseph, Jr.	Northfield

Murdoch, J. M.	Faribault
Neseth, O. S.	Kenyon
Plonske, C. J.	Faribault
Robilliard, C. M.	Faribault
Robilliard, W. H.	Faribault
Rumpf, C. W.	Faribault
Rumpf, W. H.	Faribault
Smith, P. A.	Faribault
Traeger, C. A.	Faribault
Warren, F. S.	Faribault
Wilson, Warren	Northfield
Wilson, W. E.	Northfield

## SAINT LOUIS COUNTY MEDICAL SOCIETY

St. Louis, Lake, Cook and Carlton Counties.

Regular meetings, second Thursday each month.

Annual meeting, second Thursday in October.

President	
Kuth, J. R.	Duluth
Secretary	
Elias, F. J.	Duluth
Abbott, Wm. P.	Duluth
Adams, B. S.	Hibbing
Alexander, Clifford E.	Duluth
Anderson, Hilding C.	Duluth
Arminen, K. V.	Duluth
Armstrong, E. L.	Duluth
Athens, A. G.	Duluth
Ayres, G. T.	Ely
Bagley, W. R.	Duluth
Bakkila, Henry	Duluth
Bardon, Richard	Duluth
Barney, L. A.	Duluth
Berdez, G. L.	Duluth
Bergquist, K. E.	Duluth
Bianco, A. J.	Duluth
Binet, H. E.	Grand Rapids
Blacklock, S. S.	Hibbing
Blakely, C. C.	Barnum
Block, Phoebe P.	Virginia
Boman, P. G.	Duluth
Bowen, Robert L.	Hibbing
Boyer, S. H.	Duluth
Braden, A. J.	Duluth
Bradley, E. L.	Superior, Wis.
Braverman, N. J.	Duluth
Bray, C. W.	Biwabik
Briggs, F. W.	Duluth
Brunet, L. M.	Cloquet
Bullen, F. W.	Hibbing
Burns, R. L.	Two Harbors
Carstens, C. F.	Hibbing
Chapman, T. L.	Duluth
Cheney, E. L.	Duluth
Christensen, E. P.	Two Harbors
Clark, F. F.	Duluth
Clement, T. G.	Duluth
Collins, A. N.	Duluth
Collins, H. C.	Duluth
Cosgrove, J. H.	Duluth
Coventry, W. A.	Duluth
Davis, B. F.	Duluth
Davis, H. S.	Duluth
Doolittle, L. E.	Duluth
Doyle, George C.	Duluth
Drenning, F. C.	Duluth
Eckman, P. F.	Duluth
Eisenman, W. G.	Chisholm
Eklblad, J. W.	Duluth

Eklund, Wm. J.	Duluth
Elias, F. J.	Duluth
Empie, W. M.	Virginia
Ferreira, Gideon J.	Duluth
Fischer, Mario McC.	Duluth
Fleming, James	Cloquet
Forbes, R. S.	Duluth
Gardner, R. D.	Eveleth
Gauthier, W. L.	Virginia
Gillespie, M. G.	Duluth
Gillespie, N. H.	Duluth
Gowan, L. R.	Duluth
Graham, David	Duluth
Graham, R. D.	Duluth
Graham, Robert	Duluth
Grawn, F. A.	Duluth
Gray, Royal C.	Minneapolis
Greeley, L. Q.	Duluth
Ground, H. T.	Virginia
Hall, Andrea E.	Virginia
Haney, C. L.	Duluth
Harris, C. N.	Chisholm
Hatch, W. E.	Duluth
Hayes, M. F.	Nashwauk
Heimark, O. E.	Duluth
Hill, Frederic E.	Duluth
Hirschboeck, F. J.	Duluth
Hirschfield, M. S.	Duluth
Hovde, H.	Duluth
Hursh, M. M.	Grand Rapids
Jensen, T. J.	Duluth
Kean, N. D.	Coleraine
Kerlan, M.	Bemidji
Keyes, C. R.	Duluth
Kiesling, I. H.	Nashwauk
King, W. S.	Eveleth
Klein, Harry	Duluth
Kliman, Frank E.	Duluth
Knapp, F. N.	Duluth
Kohlbray, C. O.	Duluth
Kraft, Peter	Duluth
Kuth, J. R.	Duluth
Laird, A. T.	Nopeming
Lenont, C. B.	Virginia
Lepak, F. J.	Duluth
Lindgren, E. I.	Duluth
Litman, Samuel N.	Duluth
Loofbourrow, Elias H.	Keewatin
Lum, C. E.	Duluth
McCarty, P. D.	Ely
McComb, C. F.	Duluth
McCoy, Mary	Duluth
McDaniel, S. P.	Mountain Iron
McDonald, A. L.	Duluth

McHaffie, O. L.	Duluth
McIntyre, E. H.	Virginia
McMurtry, Walter C.	Virginia
McNutt, John R.	Two Harbors
MacRae, Gordon C.	Duluth
MacFarlane, P. H.	Chisholm
Magie, W. H.	Duluth
Magney, F. H.	Duluth
Manley, J. R.	Duluth
Martin, W. C.	Duluth
Mattill, P. M.	Oak Terrace
Mayne, Roy Malone	Duluth
Merriman, L. L.	Duluth
Moe, Thomas	Moose Lake
Monroe, P. B.	Soudan
Morcom, H. W.	Duluth
More, C. W.	Eveleth
Morsman, L. W.	Hibbing
Morss, C. R.	Zumbrota
Murray, D. D.	Duluth
Nelson, E. H.	Chisholm
Nelson, R. L.	Duluth
Nicholson, M. A.	Duluth
Olson, Albert E.	Duluth
Oredson, O. A.	Duluth
Pake, S. G.	Duluth
Parker, O. W.	Ely
Paulson, G. A.	Duluth
Payette, C. H.	Duluth
Pennie, D. F.	Duluth
Perley, A. E.	Chisholm
Peterson, Edward	Buhl
Power, J. E.	Duluth
Raadquist, C. S.	Hibbing
Raihala, John	Virginia
Raiter, Franklin W. S.	Cloquet
Raiter, Roy F.	Cloquet
Reynolds, Hugh	Hibbing
Robinson, J. M.	Duluth
Rood, D. C.	Duluth
Rowe, O. W.	Duluth
Rudie, P. S.	Duluth
Ryan, W. J.	Duluth
St. Clair, G. G.	Duluth
Scherer, C. A.	Duluth
Schroeder, C. H.	Duluth
Seashore, D. E.	Duluth
Shapiro, E. Z.	Duluth
Shaw, A. W.	Buhl
Shlyfield, F. F.	Duluth
Smith, C. M.	Duluth
Smith, E. K.	Duluth
Spicer, F. W.	Duluth

Strathern, M. L. .... Gilbert  
 Strobel, W. G. .... Duluth  
 Stuart, A. B. .... Cloquet  
 Sukeforth, L. A. .... Duluth  
 Sutherland, H. N. .... Ely  
 Swenson, Arnold O. .... Duluth  
 Swenson, Paul C. .... Duluth  
 Taylor, C. W. .... Duluth

Tibbetts, M. H. .... Duluth  
 Tilderquist, D. L. .... Duluth  
 Tuohy, E. L. .... Duluth  
 Urberg, S. E. .... Duluth  
 Vercellini, C. E. .... Duluth  
 Walker, A. E. .... Duluth  
 Webber, Edward E. .... Duluth  
 Weber, M. L. .... Duluth

Webster, H. E. .... Duluth  
 Weirick, Howard R. .... Hibbing  
 Wheeler, D. W. .... Duluth  
 Wilkinson, Stella. .... Duluth  
 Winter, J. A. .... Duluth  
 Young, T. O. .... Duluth  
 Young, V. A. .... Duluth  
 Zlatovski, Michael. .... Duluth

## SCOTT-CARVER COUNTY MEDICAL SOCIETY

Regular meetings, first Thursday in March, June, September  
 and December.

Annual meeting, first Thursday in June.

President  
 Maertz, W. F. .... New Prague  
 Secretary  
 Reiter, H. W. .... Shakopee  
 Bohland, F. J. von†. .... Belle Plaine  
 Buck, Fred H. .... Shakopee  
 Cervenka, Charles F. .... New Prague

Eklund, E. J. .... Norwood  
 Fischer, H. P. .... Shakopee  
 Fischer, P. M. .... Shakopee  
 Hebesen, M. B. .... Carver  
 Henriksen, H. G. .... Elko  
 Juergens, H. M. .... Belle Plaine  
 McKeon, James. .... St. Paul  
 Maertz, W. F. .... New Prague  
 Nagel, H. D. .... Waconia

Novak, E. E. .... New Prague  
 Olson, Chester J. .... Belle Plaine  
 Phillips, W. H. .... Jordan  
 Reiter, H. W. .... Shakopee  
 Schneider, H. A. .... Jordan  
 Simons, Bern. H. .... Chaska  
 Westerman, A. E. .... Montgomery  
 Westerman, F. C. .... Montgomery

## SOUTHWESTERN MINNESOTA MEDICAL SOCIETY

Regular meetings, May and November.

Annual meeting, November.

President  
 McCrea, Jas. .... Fulda  
 Secretary  
 McKeown, E. G. .... Pipestone  
 Arnold, E. W. .... Adrian  
 Atkins, G. L. .... Jackson  
 Basinger, Harvey R. .... Mountain Lake  
 Basinger, H. P. .... Windom  
 Benjamin, W. G. .... Pipestone  
 Bofenkamp, F. W. .... Luverne  
 Bong, J. H. .... Jasper  
 Brown, A. H. .... Pipestone  
 Chadbourn, A. G. .... Heron Lake  
 Cress, P. J. .... Ellsworth  
 DeBoer, Hermanus. .... Edgerton  
 Dolan, C. P. .... Worthington  
 Doms, H. C. .... Slayton  
 Doms, Wm. .... Woodstock

Dudley, J. H. .... Windom  
 Erpelding, J. K. .... Adrian  
 Golden, C. M. .... Tyler  
 Halloran, Walter. .... Jackson  
 Hilger, J. M. .... Iona  
 Hitchings, W. S. .... Lakefield  
 Johnson, Ellsworth. .... Windom  
 Kelling, Louis F. .... Lakefield  
 Kendahl, A. M. .... Jasper  
 Kilbride, E. A. .... Worthington  
 Leebers, J. H. .... Lismore  
 Lowe, Thos. .... Pipestone  
 McCrea, James. .... Fulda  
 McKeown, E. G. .... Pipestone  
 Manson, F. M. .... Worthington  
 Metcalfe, F. W. .... Fulda  
 Mork, B. O. .... Worthington  
 Mueller, G. G. .... Windom  
 Nusbaum, D. H. .... Jackson

Patterson, W. E. .... Westbrook  
 Piper, Wm. A. .... Mountain Lake  
 Rose, J. T. .... Lakefield  
 Roust, H. A. .... Ruthton  
 Schutz, Elmer S. .... Mountain Lake  
 Sherman, C. L. .... Luverne  
 Slater, S. A. .... Worthington  
 Smallwood, J. T. .... Worthington  
 Sogge, L. .... Windom  
 Stanley, C. R. .... Worthington  
 Taylor, Wm. J. .... Pipestone  
 Thorson, E. O. .... Luverne  
 Tiedemann, Elmer J. .... Adrian  
 Tofte, Josephine. .... Dawson  
 Waller, Joseph D. .... Wilmont  
 Warren, C. L. .... Brewster  
 Watson, F. G. .... Worthington  
 Williams, Leon A. .... Slayton  
 Wright, C. O. .... Luverne

## STEARNS-BENTON COUNTY MEDICAL SOCIETY

Annual meeting, April.

President  
 Sherwood, G. E. .... Kimball  
 Secretary  
 Stangl, P. E. .... St. Cloud  
 Boehm, J. C.†. .... St. Cloud  
 Brigham, C. F. .... St. Cloud  
 Buscher, Julius. .... Albany  
 DuBois, J. A. .... Sauk Center  
 DuBois, J. F. .... Sauk Center  
 Freeman, W. L. .... St. Cloud  
 Friesleben, Wm. .... Sauk Rapids  
 Gallagher, B. J. .... St. Cloud  
 Gelz, J. J. .... St. Cloud  
 Groebner, O. A. .... Cold Spring

Gulde, W. C. .... St. Cloud  
 Haberman, E. .... Osakis  
 Hemstead, Werner. .... St. Cloud  
 Jacobson, Clarence. .... Kimball  
 Johnson, Walfred. .... Sauk Center  
 Jones, Richard N. .... Richmond  
 Kern, M. J. .... St. Cloud  
 Kohler, D. W. .... St. Joseph  
 Kuhlman, Aug. .... Melrose  
 Lewis, C. B. .... St. Cloud  
 Libert, John N. .... St. Cloud  
 McDowell, J. P. .... St. Cloud  
 McKibben, H. E. .... St. Cloud  
 Mahwald, A. .... Albany  
 Meyer, A. A. .... Melrose

Moynihan, A. F. .... Sauk Center  
 Myre, C. R. .... Paynesville  
 Pilon, P. C.†. .... Paynesville  
 Rathbun, A. M. .... Rice  
 Rathbun, C. A. .... St. Cloud  
 Richards, W. B. .... St. Cloud  
 Richardson, Fred S. .... Belgrade  
 Ridgway, Alexander. .... Belgrade  
 Schatz, F. J. .... St. Cloud  
 Sherwood, G. E. .... Kimball  
 Stangl, Fred. .... St. Cloud  
 Stangl, P. E. .... St. Cloud  
 Sutton, Chas. S. .... St. Cloud  
 Townsend, DeWayne. .... Brooten  
 Wenner, W. T. .... St. Cloud

## STEELE COUNTY MEDICAL SOCIETY.

Regular meetings, second Tuesday every odd month.

Annual meeting, November.

President  
 Ertel, E. Q. .... Ellendale  
 Secretary  
 McIntyre, John A. .... Owatonna

Ertel, E. Q. .... Ellendale  
 Gault, C. C. .... Owatonna  
 Hart, Alfred B. Jr. .... Owatonna  
 McIntyre, John A. .... Owatonna  
 Melby, Benedik. .... Blooming Prairie  
 Nelson, Ernest J. .... Owatonna

Peterson, Christian. .... Owatonna  
 Quigley, T. C. .... Owatonna  
 Senn, E. W. .... Owatonna  
 Smersh, F. M. .... Owatonna  
 Smersh, J. F. .... Owatonna  
 Stewart, A. B. .... Owatonna

Application for Emeritus or Honorary membership not completed.

## UPPER MISSISSIPPI MEDICAL SOCIETY

Annual meeting, February.

President	
Ghostley, Mary C.	International Falls
Secretary	
Badeaux, G. I.	Brainerd
Agnew, Allen T.	International Falls
Allen, F. A.	Crosby
Allen, F. H.	Staples
Anderson, C. E.	Brainerd
Badeaux, G. I.	Brainerd
Beise, R. A.	Brainerd
Cantwell, W. F.	International Falls
Carlson, H. A.	Brainerd
Christie, G. R.	Long Prairie
Christie, R. L.	Long Prairie
Cook, Jay M.	Staples
Corrigan, J. E.	Spoonerville
Craig, C. C.	International Falls
Davis, L. Thomas	Wadena
Davis, Thayer C.	Wadena
Forrest, C. G.	Clearbrook
Frost, Harry T.	Wadena
Garlock, A. V.	Bemidji
Garlock, Dewitt H.	Bemidji
Gerber, Milo P.	Brainerd

Ghostley, Mary C.	International Falls
Gilmore, Rowland	Bemidji
Grogan, J. S.	Wadena
Groschupf, Theo. P.	Bemidji
Grose, Fredk. N.	Bertha
Halenbeck, Philip L.	St. Cloud
Hawkinson, L. F.	Brainerd
Healy, R. T.	Pierz
Hilton, J. M.	Browerville
Holst, C. F.	Little Falls
Holst, J. B.	Little Falls
House, Z. E.	Cass Lake
Houston, C. A.	Park Rapids
Jacobson, David J.	Blackduck
Johnson, E. W.	Bemidji
Johnson, O. V.	Sebek
Kelly, B. W.	Aitkin
Kenyon, S. Z.	Wadena
Kerlan, S.	Aitkin
Laney, R. L.	Puposky
Larson, L. M.	St. Paul
Laughlin, J. T.	Grey Eagle
McCann, D. F.	Bemidji
McHugh, Roderick F.	Aitkin
McKinnon, J. J.	Wadena
Marcum, E. H.	Bemidji

Miller, W. A.	New York Mills
Moyer, Ralph E.	Bemidji
Nelson, Nesmith	Brainerd
Ortman, John W.	Pierz
Osburn, B. F.	International Falls
Parrott, B. W.	Long Prairie
Pengelly, E. J.	Crosby
Pierce, Chas. H.	Wadena
Ratchiffe, J. J.	Aitkin
Reeves, C. E.	Eagle Bend
Roberts, L. M.	Little Falls
Rosenfield, A. B.	Pequot
Shannon, S. S.	Crosby
Simons, Edwin J.	Swanville
Smith, B. A.	Crosby
Smith, E. H.	Bemidji
Strader, E. L.	Deerwood
Thabes, J. A.	Brainerd
Thabes, John A., Jr.	Brainerd
Van Valkenburg, B. F.	Long Prairie
Van Valkenburg, F. W.	Long Prairie
Watson, A. M.	Royalton
Watson, John D.	Holdingford
Wilcox, F. L.	Walker
Will, W. W.	Bertha
Williams, R. J.	Pine River

## WABASHA COUNTY MEDICAL SOCIETY

Annual meeting, first Thursday after first Monday in July.

President	
Cochrane, W. J.	Lake City
Secretary	
Wilson, W. F.	Lake City

Anderson, Arnold S.	Wabasha
Bond, Joseph F.	Wabasha
Bowers, H. E.	Lake City
Cochrane, W. J.	Lake City
Collins, J. S.	Wabasha
Fleischhauer, D. S.	Wabasha

Loney, William R. R.	Plainview
Radabaugh, R. C.	Hastings
Replogle, W. H.	Wabasha
Slocumb, J. A.	Plainview
Sutton, L. F.	Mazeppa
Wilson, W. F.	Lake City

## WASECA COUNTY MEDICAL SOCIETY

Annual meeting, December 1.

President	
McIntire, H. M.	Waseca
Secretary	
Swenson, O. J.	Waseca

Bergman, O. B.	St. James
Blanchard, H. G.	Waseca
Hagen, H. O.	New Richland
Leopard, B. A.	New Richland
McIntire, H. M.	Waseca

Miller, H. A.	Waseca
O'Hara, J. J.	Janesville
Swartwood, F. A.	Waseca
Swenson, O. J.	Waseca

## WASHINGTON COUNTY MEDICAL SOCIETY

Regular meetings, second Tuesday of odd months.

Annual meeting, November.

President	
Josewski, R. J.	Stillwater
Secretary	
Culver, Lucian G.	Stillwater
Boleyn, E. S.	Stillwater

Combacker, L. C.	Fergus Falls
Culver, Lucian G.	Stillwater
Haines, J. H.	Stillwater
Humphrey, W. R.	Stillwater
Josewski, R. J.	Stillwater
Kalinoff, D.	Stillwater
Landeon, F. G.	Stillwater

Poirier, J. A.	Forest Lake
Rygh, E. A.	Minneapolis
Sherman, Carnot H.	Bayport
Sherwood, K. K.	Stillwater
Stuhr, J. W.	Stillwater
Thompson, V. C.	Marine

## WATONWAN COUNTY MEDICAL SOCIETY

Regular meetings, at call.

Annual meeting, December.

President	
Hagen, O. E.	Butterfield
Secretary	
Grimes, H. B.	Madelia

Bregel, Fred L.	St. James
Grimes, H. B.	Madelia
Hagen, O. E.	Butterfield

Hefke, Hans W.	St. James
McCarthy, W. J.	Madelia
Thompson, Albert	St. James

## WEST CENTRAL MINNESOTA MEDICAL SOCIETY

Big Stone, Pope, Stevens and Traverse Counties

Regular meetings, January, April, July, October.

Annual meetings, second Wednesday in October.

President	
Leland, John T.	Herman
Secretary	
Linde, Herman	Cyrus
Aranson, J. M.	Minneapolis
Bates, B. V.	Browns Valley
Bergan, Otto	Clinton
Bolsta, Chas.	Ortonville

Caine, C. E.	Morris
Christenson, C. R.	Starbuck
Diesen, A. F.	Starbuck
Eberlin, E. A.	Glenwood
Elsey, J. R.	Glenwood
Ewing, C. F.	Wheaton
Gibbon, L. L.	Lowry
Giere, S. W.	Benson
Judge, Walter T.	Graceville
Karn, B. R.	Ortonville

Leland, John T.	Herman
Leuty, Amos	Morris
Lindberg, A. L.	Wheaton
Linde, Herman	Cyrus
O'Donnell, D. M.	Ortonville
Oliver, C. I.	Graceville
Pierson, Claude M.	Wheaton
Shelver, H. J.	Ortonville
Weir, J. D.	Beardsley

†Application for Emeritus or Honorary membership not completed.

President	Freed, O. J. R.	Cokato	Phillips, A. E.	Delano
Klaveness, E. . . . . Monticello	Harriman, L. . . . .	Howard Lake	Ridgway, A. M. . . . .	Anandale
Secretary	Klaveness, E. . . . .	Monticello	Roholt, C. L. . . . .	Waverly
Catlin, John J. . . . . Buffalo	Lee, J. L. . . . .	Watertown	Rousseau, Victor. . . . .	Maple Lake
Catlin, John J. . . . . Buffalo	Moffat, A. G. . . . .	Howard Lake	Shrader, E. E. . . . .	Watertown
Ellison, Frank E. . . . . Monticello	Norris, G. H. . . . .	Anandale	Swezey, B. F. . . . .	Buffalo
	Peterson, O. L. . . . .	Cokato	Thoresen, Thor. . . . .	Oslo, Norway

## ALPHABETICAL ROSTER

Aanes, A. M.	Red Wing	Baker, Alfred T.	Minneapolis	Bofenkamp, F. W.	Luverne
Abbott, J. S.	St. Paul	Baker, E. L.	Minneapolis	Bohland, E. H.	St. Paul
Abbott, Wm. P.	Duluth	Baker, Harry R.	Hayfield	Bohland, F. J. von f.	Belle Plaine
Aborn, W. H.	Hawley	Baker, Looe.	Minneapolis	Bole, R. S.	St. Paul
Adair, F. L.	Minneapolis	Bakke, O. H.	Minneapolis	Boley, E. S.	Stillwater
Adams, B. S.	Hibbing	Bakkila, Henry	Duluth	Bolsta, Chas.	Ortonville
Adams, J. L.	Morgan	Balcome, F. E.	St. Paul	Bolstad, H. C.	St. Paul
Adams, R. C.	Bird Island	Baldwin, A. E.	Houston	Boman, P. G.	Duluth
Adams, R. T.	Mantorville	Balfour, D. C.	Rochester	Bomberger, C. B.	Mapleton
Adams, S. Franklin	Rochester	Ball, C. R.	St. Paul	Bond, Joseph F.†	Wabasha
Adkins, C. M.	Grygla	Bannick, Edwin G.	Rochester	Bong, J. H.	Jasper
Adler, Stuart W.	Winona	Barber, J. P.	Minneapolis	Bonta, M. B.	Rochester
Adson, A. W.	Rochester	Barborka, C. J.	Minneapolis	Booth, A. E.	Minneapolis
Affeldt, Daniel E.	Kasson	Bardon, Richard	Duluth	Boothby, W. M.	Rochester
Agnew, Allen T.	International Falls	Bargen, J. Arnold	Rochester	Boquist, E. T. W.	Minneapolis
Ahrens, A. E.	St. Paul	Barker, Nelson W.	Rochester	Boquist, Harold S.	Minneapolis
Ahrens, A. H.	St. Paul	Barnes, A. R.	Rochester	Boreen, C. A.	Minneapolis
Aitkens, H. B.	LeSueur Center	Barney, L. A.	Duluth	Borg, Joseph F.	St. Paul
Akester, Ward.	Marshall	Barron, Moses	Minneapolis	Borgeson, Egbert J.	Minneapolis
Alberts, Max W.	St. Paul	Barry, L. W.	St. Paul	Borreson, Baldwin	Remer
Alden, J. F.	St. Paul	Barsness, Nellie	St. Paul	Bossingham, O. N.	Lake Benton
Aldes, Harry	St. Paul	Barton, E. R.	Minneapolis	Bottolfson, B. T.	Moorhead
Aldrich, F. H.	Belview	Basinger, H. P.	Windom	Bouna, L. R.	St. Paul
Alexander, Clifford E.	Duluth	Basinger, Harvey R.	Mountain Lake	Bouman, H. A.	Minneapolis
Alexander, F. H.	St. Paul	Bass, G. W.	Minneapolis	Bowen, Robert L.	Hibbing
Aling, C. P.	Minneapolis	Bates, B. V.	Browns Valley	Bowers, H. E.	Lake City
Allan, Frank N.	Rochester	Baumgartner, Conrad J.	Rochester	Bowers, J. T.	Thief River Falls
Allen, Chas. C.	Austin	Baxter, Geoffrey H.	Rochester	Bowing, H. H.	Rochester
Allen, Edgar V.	Rochester	Baxter, S. H.	Minneapolis	Bowles, John H.	Rochester
Allen, F. A.	Crosby	Bayha, Carl H.	Rochester	Boyer, S. H.	Duluth
Allen, F. H.	Staples	Beach, Watson	Rochester	Boysen, H.	Welcome
Allen, H. W.	Minneapolis	Beadie, W. D.	Cannon Falls	Boysen, Peter	Pelican Rapids
Allen, Mason	St. Paul	Beals, Hugh	St. Paul	Braasch, Wm. F.	Rochester
Allen, Roy W.	Rochester	Bear, H. C.	St. Charles	Brabec, F. J.	Perham
Allen, W. A.	Rochester	Beard, Archie H.	Minneapolis	Brabec, P. F.	Perham
Allison, R. G.	Minneapolis	Beard, R. O.	Minneapolis	Bracken, H. M.	Claremont, Cal.
Almquist, H. E.	Minneapolis	Bedford, E. W.	Minneapolis	Braden, A. J.	Duluth
Altnow, Hugo O.	Minneapolis	Beede, Ethel R.	Faribault	Bradley, E. L.	Superior, Wis.
Alvarez, Walter C.	Rochester	Behmler, Fred W.	Appleton	Brand, G. D.	St. Paul
Amberg, Samuel	Rochester	Beise, R. A.	Brainerd	Brand, W. A.	Redwood Falls
Anderson, A. E.	Minneapolis	Bell, C. C.	St. Paul	Branham, D. S.	Albert Lea
Anderson, Arnold S.	Wabasha	Bell, E. T.	Minneapolis	Branton, A. F.	Willmar
Anderson, Arnt G.	Minneapolis	Bell, J. W.	Minneapolis	Branton, B. J.	Willmar
Anderson, C. E.	Brainerd	Belote, G. B.	Caledonia	Bratrud, A. F.	Minneapolis
Anderson, C. M.	Rochester	Benedict, E. E.	Minneapolis	Bratrud, O. Edward	Warren
Anderson, David D.	Minneapolis	Benedict, W. L.	Rochester	Bratrud, Theodor	Warren
Anderson, Edward D.	Minneapolis	Benepe, L. M.	St. Paul	Bratrude, E. J.	Rochester
Anderson, Ernest R.	Minneapolis	Benham, E. W.	Mankato	Braverman, N. J.	Duluth
Anderson, E. W.	Rochester	Benjamin, A. E.	Minneapolis	Bray, C. W.	Biwabik
Anderson, Hilding C.	Duluth	Benjamin, W. G.	Pipestone	Bray, E. R.	St. Paul
Anderson, I. K.	Crookston	Benn, F. G.	Minneapolis	Bregel, Fred L.	St. James
Anderson, Mark J.	Rochester	Bennion, P. H.	St. Paul	Briggs, F. W.	Duluth
Anderson, Norman E.	Harmony	Benoit, F. T.	Winona	Brigham, C. F.	St. Cloud
Anderson, R. E.	Atwater	Bentley, Norman P.	St. Paul	Brigham, Frank	Watkins
Anderson, S. H.	Red Wing	Berde, G. L.	Duluth	Brimhall, J. B.	St. Paul
Anderson, Silas C.	Minneapolis	Bergan, Otto	Clinton	Broberg, J. A.	Blue Earth
Anderson, W. S.	Minneapolis	Bergh, L. N.	Montevideo	Brockbank, Thos. Wm.	Rochester
Andrews, J. W.	Mankato	Bergh, L. N.	Montevideo	Broders, A. C.	Rochester
Andrews, R. N.	Mankato	Berglund, Hilding	Minneapolis	Brodie, Walter D.	St. Paul
Andrews, R. S.	Minneapolis	Bergman, O. B.	St. James	Broker, W. S.	Battle Lake
Annis, H. B.	Minneapolis	Bergquist, K. E.	Duluth	Brooks, Chas. N.	Minneapolis
Archibald, Frank M.	Mahnomen	Berkman, D. M.	Rochester	Brooks, D. F.	St. Paul
Arends, A. L.	St. Paul	Berkman, D. M.	Thief River Falls	Brooks, G. F.	St. Paul
Arey, H. C.	Excelsior	Bernard, B. C.	St. Paul	Brousseau, J. E.	Argyle
Arminen, K. V.	Duluth	Berrisford, Paul D.	St. Paul	Brown, A. E.	Rochester
Armstrong, E. L.	Duluth	Bertelson, O. L.	Crookston	Brown, A. H.	Pipestone
Armstrong, Harry G.	Minneapolis	Bessesen, A. N., Sr.	Minneapolis	Brown, Edgar D.	Minneapolis
Armstrong, J. M.	St. Paul	Bessesen, Al. N., Jr.	Minneapolis	Brown, Ed I.	St. Paul
Arnold, E. W.	Adrian	Bessesen, Daniel H.	Minneapolis	Brown, Edw. J.	Minneapolis
Arnold, James E.	Mapleton	Bessesen, W. A.	Minneapolis	Brown, Felix M.	Rochester
Arnquist, A. S.	St. Paul	Best, F. E.	Wells	Brown, G. E.	Rochester
Arnson, J. M.	Minneapolis	Bianco, A. J.	Duluth	Brown, John C.	St. Paul
Arouni, Khalil	St. Paul	Biedermann, Jacob	Thief River Falls	Brown, Lyle L.	Crookston
Arvidson, C. G.	Minneapolis	Bigelow, C. E.	Dodge Center	Brown, P. W.	Rochester
Arzt, C. P.	St. Paul	Binet, H. E.	Grand Rapids	Brown, S. E.	St. Paul
Athens, A. G.	Duluth	Binger, H. E.	St. Paul	Browning, W. E.	Caledonia
Atkins, G. L.	Jackson	Binger, Melvin W.	Rochester	Brunet, L. M.	River Rouge, Mich.
Aune, Martin	Minneapolis	Birnberg, T. L.	St. Paul	Brunsting, Louis A.	Rochester
Aurand, W. H.	Minneapolis	Bishop, Chas. W.	Minneapolis	Buck, Fred H.	Shakopee
Aurelius, J. Richards	St. Paul	Bissell, F. S.	Minneapolis	Buie, L. A.	Rochester
Aurness, P. A.	Minneapolis	Biorgo, C. W.	Cannon Falls	Bulkley, Kenneth	Minneapolis
Ausman, Carl F.	St. Paul	Black, Wm.	Mankato	Bullen, F. W.	Hibbing
Avery, J. Fowler	Minneapolis	Blackford, Lancelot M.	Rochester	Bumpus, H. C.	Rochester
Axilrod, D. L.	Hutchinson	Blacklock, S. S.	Hibbing	Bunten, William A.	Rochester
Ayres, G. T.	Ely	Blake, Jas.	Hopkins	Burch, F. E.	St. Paul
Babcock, F. M.	Northfield	Blakely, C. C.	Barnum	Burfied, G. H.	St. Paul
Backe, Edmond	Kenyon	Blakey, A. R.	Osakis	Burling, Temple	Minneapolis
Bacon, Donald K.	St. Paul	Blanchard, H. G.	Waseca	Burnap, W. L.	Fergus Falls
Bacon, Knox	San Diego, Calif.	Blaustone, Henry H.	Minneapolis	Burns, F. W.	St. Paul
Bacon, L. C.	St. Paul	Blegen, H. M.	Warren	Burns, H. D.	Albert Lea
Bacon, R. S.	Montevideo	Bliss, John H.	Rochester	Burns, M. A.	Milan
Badeaux, G. I.	Brainerd	Block, Phoebe P.	Virginia	Burns, R. L.	Two Harbors
Bagley, W. R.	Duluth	Blumenthal, Jacob	Minneapolis	Burns, R. M.	St. Paul
Bailey, H. B.	Ceylon	Bock, R. A.	St. Paul	Burton, Carl G.	St. Paul
Baken, Melvin P.	Minneapolis	Bockman, M. W. H.	Minneapolis	Busby, James L.	Rochester
Baker, A. C.	Fergus Falls	Bodine, Marc W.	Rochester	Buscher, Julius	Albany
		Boeckmann, Egil	St. Paul	Busher, H.	St. Paul
		Boehm, J. C.	St. Cloud		

†Application for Emeritus or Honorary membership not completed.

Butler, John.....	Minneapolis	Crafts, Leo M.....	Minneapolis	Dunlap, E. H.....	Minneapolis
Butturi, C. R.....	Freeborn	Craig, C. C.....	International Falls	Dunlap, H. F.....	Rochester
Butz, J. A.....	Monterey	Craig, Wm. McK.....	Rochester	Dunlop, Alex.....	Crookston
Butzer, John A.....	Mankato	Crane, Jacob F.....	Rochester	Dunn, Geo. R.....	Minneapolis
Byrnes, W. J.....	Minneapolis	Cranmer, Richard R.....	Minneapolis	Dunn, J. N.....	St. Paul
		Creighton, Ralph H.....	Minneapolis	Dunn, Louis.....	Minneapolis
		Cremer, M. H.....	Red Wing	Dunne, Gerald P.....	St. Paul
Cabot, George S.....	Minneapolis	Crenshaw, J. L.....	Rochester	Dunsmoor, F. A.....	Minneapolis
Cabot, V. S.....	Minneapolis	Cress, E. E.....	Boyd	Durgin, F. L.....	Winnebago
Caine, C. E.....	Morris	Cress, P. J.....	Ellsworth	Dutton, C. E.†	Minneapolis
Caldwell, Jas. P.....	St. Paul	Crew, J. E.....	Rochester	Dworsky, Samuel D.....	Minneapolis
Caldwell, Kenneth S.....	St. Paul	Critchfield, L. R.....	St. Paul		
Caley, G. R.....	Princeton	Crow, E. R.....	Minneapolis	Earl, George A.....	St. Paul
Calhoun, F. W.....	Albert Lea	Crump, J. W.....	St. Paul	Earl, Robert O.....	St. Paul
Callahan, F. F.....	Pokegama	Culligan, J. M.....	St. Paul	Eberlin, E. A.....	Glenwood
Callerstrom, G. W.....	Minneapolis	Culver, Lucian G.....	Stillwater	Eby, C. B.....	Spring Valley
Cameron, J. A.....	St. Paul	Curtin, John F.....	Minneapolis	Eckman, P. F.....	Duluth
Camp, W. E.....	Minneapolis	Cutts, George.....	Minneapolis	Eckstein, A. W.....	Comfrey
Campbell, J. E.....	South St. Paul			Edlund, G.....	St. Paul
Campbell, L. M.....	Minneapolis	Dack, Lloyd G.....	St. Paul	Edstrom, Henry.....	Crookston
Campbell, Robert.....	Minneapolis	Dady, Elmer E.....	Minneapolis	Edwards, Ralph T.....	Elysian
Cannon, Harry.....	St. Paul	Dahl, Elmer O.....	Minneapolis	Egilsrud, Kristian.....	Minneapolis
Cantwell, W. F.....	International Falls	Dahl, G. A.....	Mankato	Ehnke, Wm. C.....	Willow River
Cardle, Archibald E.....	Minneapolis	Dahl, John A.....	Minneapolis	Ehrenberg, C. J.....	Minneapolis
Carey, Jas. B.....	Minneapolis	Dahlquist, G. W.....	Lancaster	Eirley, Clara S. Y.....	Mt. Pleasant, Ia.
Carlaw, C. M.....	Minneapolis	Dahlstrom, A. W.....	Minneapolis	Eisenman, W. G.....	Chisholm
Carlson, H. A.....	Brainerd	Daignault, Oscar.....	Benson	Eitel, Geo. D.....	Minneapolis
Carman, C. L.....	St. Paul	Dally, H. H.....	Amboy	Eitel, G. S.....	Minneapolis
Carman, Paul I.....	St. Paul	Daniel, Donald H.....	Minneapolis	Ekblad, J. W.....	Duluth
Carmen, J. E.....	Detroit Lakes	Daniel, Lewis M.....	Minneapolis	Eklund, E. J.....	Norwood
Caron, Robert P.....	Minneapolis	Daniels, Harry A.....	Rochester	Eklund, Wm. J.....	Duluth
Carroll, Wm. C.....	St. Paul	Daniels, J. W.....	St. Peter	Ellison, A. R.....	Detroit Lakes
Carstens, C. F.....	Hibbing	Danielson, K. A.....	Litchfield	Ellison, David E.....	Minneapolis
Carter, Fred G.....	St. Paul	Darling, J. B.....	St. Paul	Ellison, Frank E.....	Monticello
Catlin, John J.....	Buffalo	Dart, Leslie O.....	Minneapolis	Else, J. R.....	Glenwood
Cavanaugh, J. O.....	St. Paul	Daugherty, E. B.....	St. Paul	Ely, O. S.....	South St. Paul
Caylor, Harold D.....	Rochester	Daugherty, L. E.....	St. Paul	Emerson, E. C.....	St. Paul
Cervenka, Charles F.....	New Prague	Davis, Austin C.....	Rochester	Empie, W. M.....	Virginia
Chadbourne, A. G.....	Heron Lake	Davis, B. F.....	Duluth	Endress, E. K.....	St. Paul
Chamberlain, H. E.....	Minneapolis	Davis, F. U.....	Faribault	Engberg, E. J.....	St. Paul
Chambers, W. C.....	Blue Earth	Davis, Herbert.....	St. Paul	Engst, Sigfred.....	Cottonwood
Chapman, T. L.....	Duluth	Davis, H. S.....	Duluth	Engstrand, Oscar J.....	Warren
Chatterton, C. C.....	St. Paul	Davis, I. Grant.....	Rushford	Eppard, R. M.....	Cloquet
Cheleen, S. J.....	Minneapolis	Davis, John D.....	Rochester	Erb, F. A.....	Minneapolis
Cheney, E. L.....	Duluth	Davis, L. Thomas.....	Wadena	Erdmann, C. A.....	Minneapolis
Cherry, Chas. H.....	Minneapolis	Davis, Thayer C.....	Wadena	Ericksen, L. G.....	Wood Lake
Chesley, A. J.....	Minneapolis	Davis, William.....	St. Paul	Ericksen, J. L.....	Twin Valley
Chorest, J. C. R.....	Marshall	Davison, P. C.....	Willmar	Ericson, J. G.....	Minneapolis
Christensen, E. P.....	Two Harbors	Dean, Arthur C.....	Crookston	Ericson, Swan.....	Le Sueur
Christenson, C. R.....	Starbuck	Dean, Benjamin F.....	Rochester	Ernest, G. C.....	St. Paul
Christianson, A.....	St. Paul	DeBoer, Hermanus.....	Edgerton	Erpelding, J. K.....	Adrian
Christianson, H. W.....	Wykoff	De Carle, Donald W.....	Rochester	Ertel, E. O.....	Ellendale
Christie, G. R.....	Long Prairie	Decker, Walter J.....	Rochester	Eschelby, E. C.....	St. Paul
Christie, R. L.....	Long Prairie	Dedolph, Karl.....	St. Paul	Esser, John.....	Perham
Christison, J. T.....	St. Paul	Delmore, J. L.....	Roseau	Estrem, C. O.....	Fergus Falls
Chumley, Charles L.....	Rochester	Denman, A. V.....	Mankato	Estrem, T. A.....	Hibbing
Cirkler, A. A.....	Minneapolis	Derauf, B. I.....	St. Paul	Etheredge, Shuler H.....	Rochester
Clark, D. M.....	Pine City	Desjardins, Arthur U.....	Rochester	Eubanks, George F.....	Rochester
Clark, F. F.....	Duluth	Devereaux, T. G.....	Wayzata	Eusterman, G. B.....	Rochester
Clark, H. S.....	Minneapolis	Dewey, G. W.....	Goodhue	Evans, Edward T.....	Minneapolis
Clark, T. C.....	Minneapolis	Dezell, Earl R.....	Minneapolis	Evarts, Arrah B.....	Rochester
Clay, F. H.....	St. Charles	Deziel, G.....	Minneapolis	Everloij, J. A.....	Minneapolis
Claydon, L. E.....	Red Wing	Dickson, Thos. H., Jr.....	St. Paul	Ewens, H. B.....	Virginia
Clement, J. B.....	Lester Prairie	Diehl, Harold S.....	Minneapolis	Ewing, C. F.....	Wheaton
Clement, T. G.....	Duluth	Diesen, A. F.....	Starbuck		
Clifford, F. F.....	West Concord	Diessner, H. D.....	Minneapolis	Fahey, E. W.....	St. Paul
Cobb, Willis F.....	Lyle	Disen, C. F.....	Minneapolis	Fansler, W. A.....	Minneapolis
Cochrane, W. J.....	Lake City	Ditmire, David C.....	Rochester	Farabaugh, Charles L.....	Minneapolis
Colby, Woodard.....	St. Paul	Dittman, Geo. C.....	St. Paul	Farr, R. E.....	Minneapolis
Cole, H. B.....	Redwood Falls	Dixon, Claude F.....	Rochester	Farrell, J. C.....	Arlington
Cole, Wallace H.....	St. Paul	Dixon, Robert K.....	Rochester	Farrish, R. C.....	Sherburn
Coleman, F. B.....	Austin	Dodge, F. A.....	LeSueur	Faust, Louis S.....	Rochester
Collie, H. G.....	St. Paul	Dohm, A. J.....	St. Paul	Fawcett, C. E.....	Stewartville
Collins, A. N.....	Duluth	Dolan, C. P.....	Worthington	Feeney, John M.....	Minneapolis
Collins, H. C.....	Duluth	Dolder, F. C.....	Eyota	Fehland, Harold R.....	Rochester
Collins, J. S.....	Wabasha	Doms, H. C.....	Slayton	Ferguson, J. C.....	St. Paul
Colvin, A. R.....	St. Paul	Doms, Wm.....	Woodstock	Ferreira, Gideon J.....	Duluth
Combacker, L. C.....	Fergus Falls	Donaldson, C. A.†	Chandler, Ariz.	Fessler, Harold H.....	St. Paul
Comfort, Mandred W.....	Rochester	Doolittle, L. E.....	St. Paul	Figi, F. A.....	Rochester
Comstock, A. E.....	St. Paul	Dordal, J.....	Sacred Heart	Fiksdal, M. J.....	Willmar
Condit, W. H.....	Minneapolis	Dorge, Richard I.....	Minneapolis	Fink, Walter H.....	Minneapolis
Conley, Alva A.....	Cannon Falls	Dowdell, W. J.....	Kerkhoven	Finney, W. P., Jr.....	Rochester
Conner, H. M.....	Rochester	Doxey, G. L.....	Minneapolis	Fischer, G.....	Minneapolis
Conner, Wm. H.....	Minneapolis	Doyle, George C.....	Duluth	Fischer, H. P.....	Shakopee
Connor, C. E.....	St. Paul	Doyle, J. B.....	Rochester	Fischer, Mario McC.....	Duluth
Cook, Henry Wireman.....	Minneapolis	Drake, Carl B.....	St. Paul	Fischer, P. M.....	Shakopee
Cook, Jay M.....	Staples	Drake, C. R.....	Minneapolis	Fishback, Frederick C.....	Rochester
Cook, Paul B.....	St. Paul	Drake, F. A.....	Lanesboro	Fitzgerald, D.....	Minneapolis
Cooney, H. C.....	Princeton	Dredge, H. P.....	Sandstone	Fjeldstad, C. A.....	Minneapolis
Cooper, M. D.....	Winnebago City	Dreisbach, N.....	Minneapolis	Fielman, R. C.....	Minneapolis
Cooperman, H. O.....	Minneapolis	Drenning, F. C.....	Duluth	Flagstad, A. E.....	St. Paul
Corbeille, Catherine.....	Rochester	Drips, D. G.....	Rochester	Flancher, Leon H.....	Lake Park
Corbett, J. Frank.....	Minneapolis	Drought, W. W.....	Fergus Falls	Fleischhauer, D. S.....	Wabasha
Corrigan, J. E.....	Spooner	Dubbe, F. H.....	New Ulm	Fleming, A. S.....	Minneapolis
Cosgriff, J. A.....	North Mankato	DuBois, J. A.....	Sauk Center	Fleming, James.....	Cloquet
Cosgrove, J. H.....	Duluth	DuBois, J. F.....	Sauk Center	Flinn, B. P.....	Redwood Falls
Cosman, E. O.....	Minneapolis	Dudley, J. H.....	Windom	Flinn, T. E.....	Redwood Falls
Countryman, Roger S.....	St. Paul	Dulude, S.....	Dassel	Flom, A. O.....	Chicago City
Covell, W. W.....	St. Peter	Duncan, Henry.....	Marietta	Flores, O. T.....	Dodge Center
Coventry, W. A.....	Duluth	Dungay, Neil S.....	Northfield		
Cowern, F. W.....	North St. Paul				
Cowing, P. G.....	Evansville				

\*Member deceased.

†Application for Emeritus or Honorary membership not completed.

Flothow, Paul G. Rochester  
 Flower, W. Z. Minneapolis  
 Fogarty, Chas. W. St. Paul  
 Foley, F. E. B. St. Paul  
 Folken, F. G. Albert Lea  
 Forbes, R. S. Duluth  
 Ford, Burton C. Marshall  
 Ford, Frances A. Rochester  
 Forrest, C. G. Clearbrook  
 Fortin, Harry J. Rochester  
 Foshager, Henry T. Clara City  
 Foster, Wilmot C. Rochester  
 Foster, W. K. Minneapolis  
 Fowler, L. H. Minneapolis  
 Fox, Ben. Rochester  
 Fox, John M. Minneapolis  
 Franchere, F. W. Lake Crystal  
 Francis, David W. Morristown  
 Fredrickson, Alice C. Lake Lillian  
 Fredrickson, Guy V. Y. Lake Lillian  
 Fredrickson, Clyde H. Rochester  
 Freeborn, J. A. Fergus Falls  
 Freed, O. J. R. Cokato  
 Freeman, C. D. St. Paul  
 Freeman, G. H. St. Peter  
 Freeman, J. P. Albert Lea  
 Freeman, W. L. St. Cloud  
 Freiligh, W. P. Albert Lea  
 French, H. S. New London  
 Freymiller, E. F. Markville  
 Fried, Louis A. Ada  
 Friedel, A. Minneapolis  
 Friesleben, Wm. Sauk Rapids  
 Fritsche, Albert. New Ulm  
 Fritsche, L. A. New Ulm  
 Froelich, H. W. Thief River Falls  
 Frost, E. H. Willmar  
 Frost, Harry T. Wadena  
 Frudenfeld, H. H. Minneapolis  
 Fugina, George R. Mankato  
 Fulton, J. F. St. Paul  
 Funk, Victor K. Oak Terrace

Gaarde, F. W. Rochester  
 Gager, E. C. St. Paul  
 Gaines, E. C. Buffalo Lake  
 Gallagher, B. J. St. Cloud  
 Gamble, J. W. Albert Lea  
 Gamble, P. M. Albert Lea  
 Gamble, R. M. Albert Lea  
 Gammell, J. H. Minneapolis  
 Garand, J. H. Dayton  
 Garbrecht, Arthur. St. Paul  
 Gardiner, D. G. St. Paul  
 Gardner, Edwin L. Minneapolis  
 Gardner, R. D. Eveleth  
 Gardner, V. H. Fairmont  
 Garlock, A. V. Bemidji  
 Garlock, Dewitt H. Bemidji  
 Gates, C. E. Anoka  
 Gates, Russell. Minneapolis  
 Gault, C. C. Owatonna  
 Gauthier, W. L.\* Virginia  
 Gay, James G. Rochester  
 Geer, Everett K. St. Paul  
 Gehlen, J. N. St. Paul  
 Geissenger, John D. St. Paul  
 Geist, Emil S. Minneapolis  
 Geist, George A. St. Paul  
 Gelz, J. I. St. Cloud  
 Gerber, Milo P. Brainerd  
 Germs, Chas. Balaton  
 Ghent, C. Harry. St. Paul  
 Ghent, M. M. St. Paul  
 Ghostley, Mary C. International Falls  
 Gibbon, L. L. Lowry  
 Giere, E. O. St. Paul  
 Giere, S. W. Benson  
 Giesler, Paul W. Minneapolis  
 Giffin, H. Z. Rochester  
 Gillfillan, J. S. St. Paul  
 Gilles, F. I. Minneapolis  
 Gillespie, M. G. Duluth  
 Gillespie, N. H. Duluth  
 Gilmore, Rowland. Bemidji  
 Gingold, Benjamin A. Minneapolis  
 Ginsberg, Wm. St. Paul  
 Gleason, Notery A. Rochester  
 Goblrish, A. P. Sleepy Eye  
 Goeckerman, W. H. Rochester  
 Goldberg, Isadore M. Minneapolis  
 Golden, C. M. Tyler  
 Goltz, E. V. St. Paul  
 Good, Louis P. Rochester  
 Good, Ralph W. Rochester  
 Gordier, Arne C. Rochester  
 Gordon, Geo. J. Minneapolis  
 Gosin, D. F. Minneapolis  
 Gosslee, G. L. Moorhead  
 Gowan, L. R. Duluth  
 Graham, A. Stephens. Rochester

Graham, David. Duluth  
 Graham, R. D. Duluth  
 Graham, Robert. Duluth  
 Gratzek, Thos. St. Paul  
 Grave, Floyd. Minneapolis  
 Grawn, F. A. Duluth  
 Gray, F. D. Marshall  
 Gray, Royal C. Minneapolis  
 Greeley, L. O. Duluth  
 Green, E. K. Minneapolis  
 Green, George F. Rochester  
 Greene, Carl H. Rochester  
 Greene, Charles L. St. Paul  
 Greene, Earle I. Rochester  
 Greene, W. P. Minneapolis  
 Greenlee, Daniel P. Rochester  
 Greisheimer, Esther M. Minneapolis  
 Grier, James P. Rochester  
 Griffin, P. J. Fertile  
 Grimes, H. B. Madelia  
 Grinnell, W. B. Preston  
 Grise, W. B. Austin  
 Groebner, O. A. Cold Spring  
 Grogan, J. S. Wadena  
 Groschupf, Theo. P. Bemidji  
 Grose, Fredk. N. Bertha  
 Ground, H. T. Virginia  
 Gruenhagen, Arnold P. St. Paul  
 Gulde, W. C. St. Cloud  
 Gullixson, A. Albert Lea  
 Gunderson, Nels A. Minneapolis  
 Guyer, L. G. Staten Island, N. Y.

Habein, Harold C. Rochester  
 Haberman, E. Osakis  
 Hacking, Frank H. Minneapolis  
 Haessley, S. B. Faribault  
 Hagaman, Geo. K. St. Paul  
 Hagen, G. L. Minneapolis  
 Hagen, H. O. New Richland  
 Hagen, O. E. Butterfield  
 Hagen, Olaf J. Moorhead  
 Hager, Benjamin H. Rochester  
 Haggard, G. D. Minneapolis  
 Haines, J. H. Stillwater  
 Haines, S. F. Rochester  
 Haldeman, Keene O. Rochester  
 Halenbeck, Philip L. St. Cloud  
 Hall, Andea E. Virginia  
 Hall, A. R. St. Paul  
 Hall, E. L. Princeton  
 Hall, Henry H. St. Paul  
 Hall, J. M. Minneapolis  
 Hall, S. S. Minneapolis  
 Hallenbeck, D. F. Rochester  
 Halloran, Walter. Jackson  
 Halper, Philip. St. Paul  
 Hamel, Arnold L. Minneapolis  
 Hamilton, A. S. Minneapolis  
 Hamlin, George B. Minneapolis  
 Hammermeister, Theodore F. New Ulm  
 Hammes, E. M. St. Paul  
 Hammond, A. J. Minneapolis  
 Hammond, J. F. St. Paul  
 Hamrick, Robert A. Rochester  
 Hand, John R. Rochester  
 Hand, W. R. Elbow Lake  
 Hane, Richard L. Rochester  
 Haney, C. L. Duluth  
 Hanlon, Frank R. Rochester  
 Hannah, Hewitt B. Minneapolis  
 Hansen, Elmer H. Minneapolis  
 Hansen, Erling. Minneapolis  
 Hansen, M. Ada  
 Hansen, Olga S. Minneapolis  
 Hanson, A. M. Faribault  
 Hanson, H. J. Minneapolis  
 Hanson, H. V. Minneapolis  
 Hare, E. R. Minneapolis  
 Harmon, G. E. St. Paul  
 Harriman, L. Howard Lake  
 Harrington, C. D. Minneapolis  
 Harrington, Ethel R. Rochester  
 Harrington, F. E. Minneapolis  
 Harrington, S. W. Rochester  
 Harris, C. N. Chisholm  
 Harrison, E. E. West Concord  
 Hart, Alfred B., Jr. Owatonna  
 Hartiel, Wm. F. St. Paul  
 Hartley, E. C. St. Paul  
 Hartman, H. R. Rochester  
 Hartwell, Shattuck W. Rochester  
 Hartzell, John B. Rochester  
 Hartzell, Thos. B. Minneapolis  
 Haskell, A. D. Alexandria  
 Haskins, John L. Northfield  
 Hassett, Roger G. Bird Island  
 Hastings, D. R. Minneapolis  
 Hatch, W. E. Duluth  
 Hathaway, J. C. Minneapolis  
 Hauge, M. M. Clarkfield  
 Hauser, Emil D. Rochester

Hauser, V. P. St. Paul  
 Havens, Fred Z. Rochester  
 Haverfield, Addie R. Minneapolis  
 Hawkins, V. J. St. Paul  
 Hawkins, L. F. Brainerd  
 Hayes, J. M. Minneapolis  
 Hayes, M. F. Nashwauk  
 Haynes, A. L. Faribault  
 Head, G. D. Minneapolis  
 Healy, R. T. Pierz  
 Hearn, Wm. O. Minneapolis  
 Heath, A. C. St. Paul  
 Hebeisen, M. B. Carver  
 Heck, Frank J. Rochester  
 Heck, Wm. W. St. Paul  
 Hedback, A. E. Minneapolis  
 Hedenstrom, F. G. St. Paul  
 Hedenstrom, L. H. Cambridge  
 Heffe, Hans W. St. James  
 Hegge, C. A. Austin  
 Hegge, O. H. Austin  
 Heiberg, E. A. Fergus Falls  
 Heim, Russell R. Minneapolis  
 Heimark, J. H. Moorhead  
 Heimark, O. E. Duluth  
 Heimdal, Clarence O. Rochester  
 Heise, W. F. C. Winona  
 Helk, H. H. Minneapolis  
 Helland, G. M. Spring Grove  
 Helland, J. W. Spring Grove  
 Helmholtz, H. F. Rochester  
 Hempstead, B. E. Rochester  
 Hemstead, Werner. St. Cloud  
 Hench, Philip S. Rochester  
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 Henderson, Earl F. Rochester  
 Henderson, M. S. Rochester  
 Hendrickson, J. F. Minneapolis  
 Hengstler, W. H. St. Paul  
 Henney, Wm. H. McIntosh  
 Henriksen, H. G. Elko  
 Henry, C. E. Minneapolis  
 Henry, Myron O. Minneapolis  
 Hensel, C. N. St. Paul  
 Henslin, A. E. Le Roy  
 Herbst, Wm. P. Minneapolis  
 Herman, Arthur L. Minneapolis  
 Herrmann, Peter E. Ivanhoe  
 Herrmann, Edgar T. St. Paul  
 Herrmann, S. F. Rochester  
 Hertel, G. E. Austin  
 Hesselgrave, S. S. St. Paul  
 Hewson, Wilfred J. Stillwater  
 Heverdale, O. C. Rochester  
 Hiebert, J. P. Minneapolis  
 Higbee, Paul A. Minneapolis  
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 Hilbert, Eunice. Minneapolis  
 Hilger, A. W. St. Paul  
 Hilger, D. D. St. Paul  
 Hilger, J. M. Iona  
 Hilger, L. A. St. Paul  
 Hill, Eleanor J. Minneapolis  
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 Hilton, J. M. Browerville  
 Hiniker, Louis P. St. Paul  
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 Hirschfelder, A. D. Minneapolis  
 Hirschfield, M. S. Duluth  
 Hirschfield, F. R. Minneapolis  
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 Hodge, S. V. Minneapolis  
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 Hoff, Alfred. St. Paul  
 Hoffman, Max H. St. Paul  
 Hoidale, A. D. Tracy  
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 Holcomb, O. W. St. Paul  
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 Holloway, Jackson K. Rochester  
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 Holm, Geo. A. Minneapolis  
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 Holm, P. F. Wells  
 Holman, C. J. Mankato  
 Holmberg, L. J. Canby  
 Holmes, A. E. Rush City  
 Holmes, W. B. Ada  
 Holst, C. F. Little Falls  
 Holst, J. B. Little Falls  
 Holt, W. B. Minneapolis  
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 Holte, H. Crookston  
 Horton, Bayard T. Rochester

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		Kierland, P. E.	Alexandria	Lewis, W. W.	St. Paul
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Jamieson, Earl	Walnut Grove	Kirk, G. P.	East Grand Forks	Lindgren, E. I.	Duluth
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Johnson, Ellsworth	Windom	Knauff, M. K.	St. Paul	Logan, A. H.	Rochester
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Johnson, O. V.	Sebekka	Koller, L. R.	Minneapolis	Lowe, Thomas	South St. Paul
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Jones, D. C.	St. Paul	Kuhlman, Aug.	Melrose	Lundquist, E. F.	Minneapolis
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Jones, Robert D.	Rochester	Lajoie, John M.	Minneapolis	Lysne, Henry	Minneapolis
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Jordan, Elverse M.	Rochester	Laney, R. L.	Puposky	McBeath, Ewing C.	New York City
Jordan, Ferdinand M.	Rochester	Langenderfer, F. V.	St. Paul	McBroom, D. E.	Faribault
osewich, Alexander	Minneapolis	Langhoff, A. H.	Glencoe	McCann, D. F.	Bemidji
osewski, R. J.	Stillwater	Lannin, J. C.	Mabel	McCann, James C.	Rochester
oyce, G. T.	Rochester	Lapierre, A. P.	Minneapolis	McCarthy, Donald	Minneapolis
udd, E. S.	Rochester	Lapierre, C. A.	Minneapolis	McCarthy, W. J.	Madelia
udge, Walter T.	Graceville	Larsen, C. L.	St. Paul	McCarthy, W. R.	St. Paul
uergens, H. M.	Belle Plaine	Larsen, O. O.	Detroit Lakes	McCartney, James S.	Minneapolis
uliar, R. O.	St. Clair	Larsen, A. L.	Fertile	McCarty, P. D.	Ely
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Kaasa, L. J.	Albert Lea	Larson, I. M.	St. Paul	McClanahan, T. S.	White Bear Lake
Kadecky, David	St. Paul	Laughlin, J. T.	Grey Eagle	McCloud, C. N.	St. Paul
Kahala, Arthur	Crookston	Laurent, A. A.	Minneapolis	McComb, C. F.	Duluth
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Kamman, Gordon R.	St. Paul	Law, A. A.	Minneapolis	McCrea, James	Fulda
Kamp, B. A.	Albert Lea	Lax, Morris H.	St. Paul	McCuskev, Charles F.	Rochester
Kannary, E. L.	St. Paul	Lazar, H. L.	Minneapolis	McDaniel, Orianna	Minneapolis
Kanne, C. W.	Faribault	Leahy, Bartholomew	St. Paul	McDaniel, S. P.	Mountain Iron
Karn, B. R.	Ortonville	Leavenworth, Richard O.	St. Paul	McDonald, A. L.	Duluth
Kaufman, A. J.	Franklin	Leavitt, H. H.	Minneapolis	McDonell, C. H.	Winona
Kaufman, Wm. C.	Appleton	Lebowski, Jos. A.	Minneapolis	McDowell, J. P.	St. Cloud
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Kelling, Louis F.	Lakefield	Leddy, Eugene T.	Rochester	McGandy, R. F.	Minneapolis
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		Lee, J. L.	Watertown		

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McGuigan, H. T.	Red Wing	Mills, Ralph G.	Rochester	Nye, Lillian L.	St. Paul
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McHugh, Roderick F.	Aitkin	Mitchell, Frederick	St. Paul	O'Brien, H. J.†	St. Paul
McIntire, H. M.	Waseca	Mitchell, R. S.	Grand Meadow	O'Connor, D. C.	Eden Valley
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McIntyre, Geo.	Minneapolis	Moench, L. Mary.	Rochester	O'Connor, J. P.	St. Paul
McIntyre, John A.	Owatonna	Moersch, F. P.	Rochester	O'Connor, Patrick H.	Amboy
McKaig, Carl B.	Pine Island	Moersch, H. J.	Rochester	O'Donnell, D. M.	Ortonville
McKeithen, A. M.	Rochester	Moffatt, A. G.	Howard Lake	O'Donnell, J. E.	Minneapolis
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McKeon, James.	St. Paul	Moir, Wm. W.	Minneapolis	O'Leary, P. A.	Rochester
McKeon, J. O.	Montgomery	Molander, H. A.	St. Paul	Oberg, C. M.	Minneapolis
McKeown, E. G.	Pipestone	Monahan, R. H.	Minneapolis	Ochsner, Harold C.	Rochester
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McKinley, J. C.	Minneapolis	Moore, Thomas B.	Rochester	Ohage, Justus.	St. Paul
McKinney, F. S.	Minneapolis	Moorhead, M. B.	Minneapolis	Ohage, Justus, Jr.	St. Paul
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McLaren, Jeanette M.	St. Paul	Morcom, H. W.	Duluth	Ohnstad, J. L.	McIntosh
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McNutt, John R.	Two Harbors	Morley, G. A.	Crookston	Olson, Ernest A.	Pine Island
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MacDonald, Irving C.	Minneapolis	Mortenson, N. G.	St. Paul	Onsgard, L. K.	Houston
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Magie, W. H.	Duluth	Muller, R. Theo.	St. Paul	Otto, H. C.	Frazee
Magney, F. H.	Duluth	Murdoch, J. M.	Faribault	Overend, K. V.	Hallock
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Mattill, P. M.	Oak Terrace	Nelson, H. E.	Crookston	Patterson, W. L.	Fergus Falls
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Mayland, M. L.	Faribault	Nelson, M. S.	Granite Falls	Payette, C. H.	Duluth
Mayne, Roy Malone.	Duluth	Nelson, Nesmith.	Brainerd	Pearce, N. O.	Minneapolis
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Meierding, Wm. A.	New Ulm	Neseth, O. S.	Kenyon	Penhall, F. W.	Morton
Meinert, A. E.	Winona	Neumann, C. A.	Lewiston	Pennie, D. F.	Duluth
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Merriman, L. L.	Duluth	Nomland, Ruben.	Rochester	Peters, R. M.	Minneapolis
Mesker, G. H.	Olivia	Nootnagel, C. F.	Minneapolis	Petersen, I. R.	Minneapolis
Metcalf, F. W.	Fulda	Noran, A. N.	Minneapolis	Petersen, Thorvald.	Minneapolis
Metheny, David.	Rochester	Nordin, C. G.	St. Paul	Peterson, Alfred.	Dassel
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Meyer, E. L.	Minneapolis	Nordland, Martin.	Minneapolis	Peterson, Christian.	Owatonna
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Meyerding, E. A.	St. Paul	Norrard, H. T.	Milaca	Peterson, H. E.	Granite Falls
Meyerding, H. W.	Rochester	Norris, Edgar H.	St. Paul	Peterson, Joel A.	Rochester
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Michelson, H. E.	Minneapolis	Norris, J. F.	St. Peter	Peterson, O. L.	Cokato
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Miller, W. A.	New York Mills	Nutting, Roland E.	Rochester	Pettit, C. W.	Minneapolis

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Rodda, F. C.	Minneapolis	Shapiro, E. Z.	Duluth	Stratte, J. J.	Hallock
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 Strobel, W. G.....Duluth  
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 Strout, G. Elmer.....Minneapolis  
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 Swenson, Charles.....Braham  
 Swenson, O. J.....Waseca  
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 Viecelli, James D.....Rochester  
 Vik, Melvin.....Onamia  
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 Von der Weyer, Wm.....St. Paul  
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 Voyer, Emile O.....Minneapolis  
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 Williams, H. L.....Minneapolis  
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 Williams, Robert.....Minneapolis  
 Williams, R. J.....Pine River  
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## CERTAIN RELATIONSHIPS OF THE PHYSICIAN AND THE PUBLIC\*

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*Rochester, Minnesota*

IN the last forty years there has been a great change in the relationships of physician to the public which is in large measure dependent on the change in the science of medicine itself. I would like to call your attention briefly to some phases of this change.

The medicine of the older day was learned by the young man, from the start of a high school education only, usually within a period of three calendar years, in each of which only a very few months were spent in medical study. Associated with this, in those portions of the year when the medical student was not in medical school his time was frequently spent as an apprentice to a physician, usually a general practitioner. Sometimes he worked in a hospital for a year or so after graduation from medical school, but more frequently he began the practice of medicine at once. Aside from his brief training in anatomy, physiology, and chemistry, almost all of his instruction concerned the recognition of the symptoms of disease and the application of drugs or operative procedures toward the relief of those symptoms. His knowledge of the cause of disease was very meager. Any conception that the body might have a defensive mechanism of its own was still bound up in the "humoral theory."

The relatively small amount of time and study necessary to encompass the relatively small amount of well-known medical knowledge at that time had one material advantage for the young physician. The time saved permitted him to begin his work early in life and to give some attention to things only distantly related, if at all, to the field of medicine. The physician thus came to have, as he had had for centuries, a

broad grasp of many related fields of knowledge. Forced to study symptoms for his diagnoses, which had to be made without the aid of any of the more recently developed laboratory examinations, he was forced equally to study the mind as well as the body of his patient, and to know the patient's psychology. In fact, much of his medical treatment was essentially more psychical than physical. He was regarded by the members of his community, not only as a scholarly man but a man of unusual common sense. It was a toss-up in the minds of his community, especially in the audience around the stove at the corner grocery store, who knew the most, the minister, the doctor, or the lawyer. The advantage of knowledge obtained from reading was conceded most frequently to the minister! The lawyer was, of course, more skilful in argument, but the doctor was almost universally conceded to have the most common sense. That is, he had the best judgment concerning all the affairs of the community of any man in the community.

Let us see now the change which has occurred in these relationships of the physician to his community. In the last four decades during which the education of the American physician has so changed, in no other period of its history has the accretion to the sum total of human knowledge been so tremendous as it has during the last forty years. The mind of the medical student and young physician has not only been forced to its most rapid gait to acquire the things already established by sciences directly fundamental to medicine but also to familiarize itself with those things established by the ancillary sciences, of physics, chemistry, and biology. There has also been a perfect tornado of new hypotheses and frequently uncontrolled experi-

\*Abstract of a talk at the annual banquet of the Lyman-hurst Medical Staff, March 28, 1928.

ments suggesting relationships which, if true, could not be ignored by the physician but which were difficult either to prove or disprove. Every university faculty physician returning from the older centers of medical learning in Europe brought back with him a great load of new facts and theories, some of which were valuable but all of which had to be evaluated. In the last twenty years we have been developing these new facts and theories ourselves in America at such a rate that the mind staggers in attempting to place them in their true relationships.

As a result of this huge development, not only of real knowledge but also of hypotheses to be tested, the medical student would not have been able to encompass even a modicum of our present medical knowledge in the period to which its acquisition was allotted half a century ago. The course of study in our medical schools consequently has stretched to a minimum of six years beyond the high school in the bare attainment of the theory of clinical medicine. Following this at least one year of hospital residence is now required before graduation in our own and many other universities. The age of graduation has risen from an average of twenty-two years to an average of more than twenty-six years. The old apprenticeship to the practicing physician during vacation time, which used to occupy more than half of the calendar year, has almost entirely disappeared and the medical student now spends his vacation largely in additional laboratory work or in hospitals. At present, the good medical student at twenty-six to twenty-seven years of age now finds himself first equipped to begin general practice. But general practice in a sense has become a will-o'-the-wisp, not that it is no longer necessary, but that it is no longer so generally sought. The specialties are now more and more the medical graduate's goal. To attain proper training in these after his general medical training, a minimum of three years and more, usually four or five, of most intensive study and clinical work still lies before him. Thus, instead of beginning practice on his own responsibility and as a definite factor in the community at the age of twenty-three he is now beginning it at the age of thirty or more.

What are the gains and what the losses, not to science alone but to society, that are related to these tremendous changes in the training of the

physician? No one would hesitate for a moment, I believe, in saying that the physician of the present day not only knows vastly more of medical science than the physician of four decades ago but that he also knows a much larger proportion of the facts in the related sciences of today than did the graduate of forty years ago know of the sciences of that day. Before beginning his unsupervised work in the diagnosis and treatment of disease he has attained under careful supervision much more thorough training than was obtained by the graduate of forty years ago. Unquestionably he, at thirty years of age, as a specialist or at twenty-six years of age as a general practitioner, is vastly more able to find out what is the matter with patients, to alleviate their suffering, and, where possible, to prolong their lives, than was the man of similar age forty years ago. His efficiency as a professional man has greatly increased. This is proved in the large, beyond peradventure, by the reduction of the spread of communicable diseases, the relief of hitherto unrelievable suffering, and by the general prolongation of life. All these factors and many others are on the gain side of the balance sheet and neither the medical profession nor society in general must lose sight of them. But what of the factors on the other side, the loss side of the balance sheet?

First, those losses to the physician himself. His youth has gone by with little of the joy of youth. His period of idealism has either been entirely stunted by the grind of scientific thought or has been narrowed to the field of science. In common with most other educated men his appreciation of poetry, music, the drama, and art has been put off all too frequently and too far. Culture which is attained largely through familiarity with useless knowledge has been neglected because of the necessity for deeper acquaintance with useful knowledge. The fine art of conversation is almost lost; that of letter-writing is entirely lost. When a physiologist, a surgeon, a banker, a drygoods merchant, and a farmer lunch together, what topic of conversation except prohibition and the comic strips have they in common? The development of dining clubs, Rotary, Kiwanis, and so forth, where lectures and noise are offered as a substitute for intellectual companionship, is present-day society's attempt to retrieve something of the charm of the nightly discussions around the

corner grocery store stove. No longer does the physician feel that he either has the time, the inclination, or the preparation even to think of much outside of his profession and sciences related thereto. Occasionally the time for the great boon of taking thought is granted him by sickness or advancing age.

But, someone asks, is it of any great consequence to society that the physician of the present day has lost his interest in common things, and has become more or less a scientific Robot? Cannot society afford a caste which knows only science? No, most emphatically no! Society cannot afford any castes. Most of all it cannot afford a caste of medicine. For the practice of medicine is not now nor ever has been pure science with humanity left out. The human animal, physically but still more psychologically, is subject to too many surprising variants which may not be ignored in the diagnosis and treatment of its abnormalities. Medical science, it is true, has become more and more exact; more a real science. But humanity has changed but little in the multiplicity of its variations. Compared with pure-bred cattle, pure-bred dogs, and pure-bred chickens, about whose reactions we can predicate with considerable certainty, the human animal is still in a most primitive stage, not only physically but, much more so, psychologically. The rather wide-spread defection from sharply defined religious tenets, for example, has so changed a large number of our citizens that there is no knowing exactly in advance how they will react to any proposition involving morals. This impossibility of predicating in advance what any individual will do in any given set of circumstances involves not only religion, but respect for law, relationships to physical health, and many other things which lie at the foundation of society.

It is not amiss to note that during the period of greatest development of medical science, development not only in its content but also in its intent, there has been at the same time in this country the greatest development of favorable inclination toward weird hypotheses concerning the character of disease and methods of its treatment that the world has ever seen. That this is not due merely to the dissemination of new knowledge to those strata of society which previously had never thought and which are now incapable of logical thought is amply demon-

strated by the growth of cults with a clientele made up in large measure of those members of society who have been by tradition and training accustomed to thinking. The aberration of their mental processes is not due to moronic heredity but perhaps in large measure to lack of contacts with enough individuals with sound common sense.

The physician in his contacts with patients who have more or less lost their physical or psychical stability is, I believe, today more lacking than in the past in a sympathetic appreciation of the intense, though it may be utterly illogical, mental attitude of the patient. Not finding help for his troubles in treatment rendered by the highly educated and most knowledgeable modern physician, the patient reverts to primitive savage instincts, mysticism, charms, amulets, religious rites, modern voodooism of all sorts, for relief. And, since such relief is in great demand, there have sprung up all kinds of modern witch-doctors who promise that relief for a price. There is no doubt that many times they do bring relief to the disturbed mind which might have been better relieved by the physician himself had he taken thought.

There is some feeling in the popular mind that the physician of the present day is not greatly endowed with knowledge or experience in things which lie outside the diagnosis and treatment of well-recognized physical or psychical disease. I fear this is being to some extent confirmed by certain excellent physicians who think themselves too busy, not only to take time for discussing the imagined diseases of their patients but also too busy to take time for the thorough examination of confessedly well men and women who wish to be examined as a routine health measure. Though the policy of annual examinations of children and of persons past the prime of life is earnestly advocated by authoritative speakers in many medical meetings, yet all too frequently the family physician, whose duty it should be to make such examinations, is inclined to treat them casually and to assure his apparently well patients of their perfect health without having made an examination sufficiently thorough to discover the beginnings of any one of a number of serious ailments, including tuberculosis, with which they may be affected. Our experience in the Mayo Clinic and Mayo Foundation in making annually thorough examinations of all members

of the staff and of all non-professional employees, most of whom are apparently in perfect health, has given us some astonishing surprises. After only two years of such examinations of the staff members, I am sure every physician on the staff is thoroughly convinced not only of their importance but also of the necessity for their being conducted in the most thorough manner.

There is another aspect of the reaction of the public to the accomplishment of the present-day physician which is difficult to analyze. I refer to the attitude of the public toward examinations after death. Occasionally friends of the dead feel that the physician who has diagnosed and treated the case must surely know before the death of the patient all that it is possible to know. It sometimes requires large honesty on the part of the physician to explain to the friends frankly and truthfully that he does not in any sense regard himself as omniscient and that there are probably some things of importance connected with the diseases of this patient with which he is not familiar and of which he might obtain valuable knowledge by postmortem examination. The honest statement of this attitude by the physician coupled with the further statement that the friends of the dead ought to know and have the right to know everything which can be found out concerning their dead relatives will usually go a long way, not only in obtaining consent for examination but also in establishing greater confidence in the integrity of the physician. I cannot refrain at this point from alluding to the remarkable record made last year in the city of Minneapolis by the Department of Pathology at the State University acting in cooperation with a number of interested physicians in the city. The records show that the University of Minnesota, on consents obtained in most instances by practicing physicians, was able to make examinations of the bodies of 19 per cent of all persons dying in this city of half a million souls. This record, I believe, has not been equalled in any other city of considerable size in the United States. It is a pleasing commentary on the confidence with which the residents of this city regard their physicians. It is also a record which every other city in this country might do well to emulate and if possible improve upon.

I wish to speak finally of the wider and much broader manner in which the isolation of mem-

bers of the medical profession is working against, what I believe to be, the best interest of society. In the good old days in this country and in the present day in most continental European countries, the members of the medical profession have taken an active part in the educational, economic, and political affairs of their local community and of the state generally. Time was when at least one physician was to be found on almost every school board, and when a considerable sprinkling of physicians was to be found in every state and national legislative body. At present physicians are infrequently found on school boards, and with the exception of certain states, as Virginia and North Carolina for example, the number of physicians in legislative assemblies is reduced almost to the vanishing point.

I do not hesitate to say that the education of the medical man today is not only the longest but also the most thoroughly scientific and most logically disciplined of that of any professional man in society. Such an education as the physician obtains actually fits his mind to cope with problems outside of his profession as well as in it. It is doubtful if any other group of persons in the community knows as much of the things basic to most of the problems about which present day legislation concerns itself as does the physician. It is remarkable that a large proportion of present day laws are concerned with the physiology of food, drink, and relations of the sexes, while most of the defenses for great crimes which are set up are based on variations of psychic phenomena. Why are not the men who are the only ones who have any considerable knowledge of these subjects in a broad scientific way drafted by the communities in which they live to assist in framing laws governing these relationships of society? I do not wish to cast any disparagement on the lawyer as a law maker. I have no doubt he is necessary in legislative bodies if for no other reason than his ability to prognosticate how a given law may appeal to judges called on to pass on its validity. But I do believe it is most important that society, in attempting to regulate by legal enactment its physiological and psychical functions, should have the benefit of the judgment of the people in the community most fitted by education and experience to give wise counsel in these matters. It would be out of all proportion to their numbers if physicians repre-

sented one-third of the membership of legislative bodies; but such a ratio would not be out of proportion to the knowledge of the subjects most under legislative discussion with which they are possessed.

I would like to sum up by an appeal to all

those present for greater confidence in the ability and judgment of the physician, not only as a scientist but as a man, a man of common sense, whose knowledge of the underlying truths concerning the welfare of society should be much more broadly utilized than at present.

#### ANNUAL MEETING OF THE COUNCIL ON PHARMACY AND CHEMISTRY

Among the questions considered, those of special interest to the medical profession were: It was decided to coöperate with the Committee of Pharmacopeial Revision in studying the activity of a digitalis preparation for hypodermic use offered for the Pharmacopeia. It was decided that unless new evidence develops, to exclude all digestive enzyme preparations from New and Non-official Remedies with the close of 1929. It was decided to omit all desiccated pituitary preparations from New and Non-official Remedies with the close of the longest period for which any such preparation now stands accepted, unless before then new evidence for their value becomes available. The Council discussed the available evidence for the value and rationality of a mixture of a barbitol compound, marketed as such and found acceptable, with an analgesic such as amidopyrine, provided such a mixture is marketed under a name descriptive of its composition and the claims made for it are supported by acceptable evidence. The Council voted to recommend to the Board of Trustees that the distribution of New and Non-official Remedies to medical classes be resumed. It was decided to ask the general manager to mark distinctively in the American Medical Directory those journals which will promise to limit their advertising of proprietary medicines to those accepted for New and Non-official Remedies. The Council proposes to offer its coöperation with a view to examining all food preparations (except natural foods in their natural state) proposed for advertising in A. M. A. publications. The Council considered the question of the importation of non-narcotic drugs now barred by the Narcotic Drug Import and Export Act. (Jour. A. M. A., April 28, 1928, p. 1377.)

#### THE DOCTOR

The average doctor has an income of \$2,000 a year but he makes a great deal more than that. Did you ever stop to think that the doctor is one of the most abused men on earth. Let the biggest dead beat in Cottonwood county call for a doctor tomorrow and if that doctor should refuse to aid him, to help his sick wife or his child, we would all be ready to criticize. But when the grocer sees a dead beat he refuses to sell to him except for cash. The newspaper will stop coming to him if he does not pay his subscription. But the doctor is a brute if HE refuses his services. So all of us should take a rather charitable attitude to the man who is ready at all hours to come to our aid. He has infinite patience and certainly a wonderful temper.—D. L. Keith, Cottonwood Citizen.

#### POLIOMYELITIS ANTISTREPTOCOCCUS SERUM

The Council on Pharmacy and Chemistry publishes a preliminary report on poliomyelitis antistreptococcus serum. The Council reports that the use of a specific antiserum in the treatment of poliomyelitis has been proposed; that a number of reports on the use of such a serum have been published and that two commercial products, obtained by immunizing horses against strains of streptococcus from poliomyelitis patients, have been submitted to the Council. The Council reports that, because of lack of adequate evidence, it had been decided not to accept any poliomyelitis antistreptococcus serum until more positive evidence for its usefulness becomes available. (Jour. A. M. A., February 25, 1928, p. 617.)

## ROENTGENOTHERAPY IN CERTAIN TYPES OF NEURITIS AND NEURALGIA\*

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**B**EFORE beginning a discussion of the use of roentgen rays and radium for the purpose of relieving pain in certain types of neuritis and neuralgia, I wish briefly to review the general status of present knowledge of radiotherapy in this connection and the several hypotheses which have been advanced.

The phenomenon of occasional unequivocal relief of pain was one of the first attributes of irradiation noted. Despeignes, in 1896, reported a case of advanced gastric carcinoma in which the patient experienced definite symptomatic relief following treatment by roentgen rays. Gocht, in 1897, noted instances of analgesia in two cases of advanced mammary carcinoma and in a case of severe trigeminal neuralgia. Grummach, in 1899, and Stembo, in 1900, confirmed this phenomenon with more extended observations. Roentgenotherapists noted unanticipated relief of pain coincident with examination of sprains and contusions or in cases of pain due to unknown cause. It is well known that carbuncles and furuncles may be arrested if appropriately irradiated in the early stages, or, if treatment is applied after they are well established, resolution is hastened and the pain may disappear even before change in the tissue is apparent. Painful callosities and corns are almost invariably relieved and a certain proportion of cases of chronic infectious arthritis, gout, tuberculous lesions, phlegmonous swellings or periadenitis and erysipelas may be favorably influenced. Pain produced by the pressure of malignant invasion even to the extent of destruction of bone may disappear promptly following irradiation, often in spite of the fact that regression of the tumor is not demonstrable.

The rapidity of response and the apparent independence of the analgesic effect from any evident improvement in the primary disease has been the chief basis for the hypothesis that the anodyne action of irradiation is through a direct

effect of the rays on the nerve tissue. Experimental evidence based on studies of histologic change after irradiation within the therapeutic dose does not support this view. After careful study, Obersteiner was unable to establish with certainty any change due to irradiation in the central nervous system of adult animals. Okadas irradiated peripheral nerves with large doses of roentgen rays, and from thirty-one to forty-two days later examined the nerves and end organs without finding demonstrable histologic change, and Lenser observed that the nerve endings in the skin did not show degenerative change after massive exposure to roentgen rays. A functional change in nerve irritability, such as results from certain drugs without histologic evidence of tissue change, has, however, not been excluded. Experiments in this field are few, due to the obvious difficulty of determining objectively sensory disturbances in animal experimentation. Tarchanoff, after establishing the reflex response of frogs to a constant stimulus, exposed the brain to roentgen rays and found that after irradiation reflex response was decreased. Swann presented similar evidence based on elevation of blood pressure with sensory stimulation of an animal under anesthesia. He found that small doses of roentgen rays increased and larger doses decreased the response to stimulation. Eckstein had observed two cases of suppression of cough and vomiting reflexes after roentgen-ray exposure of the thorax and throat; one was a case of gastric carcinoma in which vomiting was exhaustive and the other a case in which cough was incessant but the element of hysteria could not be excluded.

Alexander contests the view that irradiation affects nerve tissue directly. He believes that analgesia following irradiation is dependent primarily on hyperemization of tissue which he maintains can be produced as well by simpler and cheaper methods. Freund supports this explanation with the belief that even by the use of so-called radicular irradiation, that is, application of the rays over the point of exit from the spinal cord of the involved nerves, the hyper-

\*From the section on Radium and Roentgen-ray Therapy, Mayo Clinic, Rochester, Minnesota. Read before the Iowa Radiology and Physical Therapy Society, Des Moines, Iowa, February 23 and 24, 1928.

emization extends throughout the tissue along the course of the nerve. It is difficult to accept this conception without assuming an intermediate action on vasomotor innervation. Critics call attention to the relatively low dose of irradiation effective in securing relief of pain, which need never reach the point of erythema of the skin over the treatment field. It would seem that the validity of this theory might readily be established by careful studies of temperature changes after irradiation, similar to those of Adson and Brown in limbs affected with Buerger's disease after sympathectomy.

Béclère and his associates believe that relief of pain is an indirect result of relief of pressure, either through absorption or resolution of inflammatory products, or from reduction of a growth. There are many examples of relief by irradiation of neuralgic pain caused by a demonstrable tumor, in which this view must be accepted. The ability of roentgen rays to affect resolution of inflammatory tissue is shown in the rapid softening of the tense swelling of carbuncles after irradiation. Eckstein has reported a case of arthritis in which both knees were hugely distended with exudate and periarticular swelling. Irradiation repeatedly resulted in temporary relief. If only one knee were irradiated, an associate who had been absent during the treatment could invariably detect the treated side by changes in crepitation, or other characteristics, on palpation of the joint. Almost explosive destruction of lymphocytic accumulation with roentgen rays has been described. In sclerotic inflammatory reactions, such as dense perineural or perivascular tissue as developed in cases of certain chronic inflammation or metabolic disturbance, such rapid resorption of inflammatory products is not easily imagined.

Few syndromes have proved more amenable to irradiation than has neuralgic pain, the causes of which are varied. The essential characteristic of neuralgic pain is intense spasm arising spontaneously or from traction on the nerves, and affecting only an area supplied by a particular nerve or one or more branches of a nerve. Gocht reported complete relief on the second day after irradiation in a severe case of trigeminal neuralgia of ten or eleven years' duration, with daily attacks of such severity that high doses of morphine had been required. This report was

paralleled by that of Grummach in 1899, which included cases of facial and intercostal neuralgia. Stembo, in 1900, noted complete relief in twenty-one of twenty-eight cases of various types of neuralgia; in four of the remaining cases there was improvement and in only three did the condition remain unaltered by the treatment. Zimmer, Cottenot and Pariaux noted that in nineteen of twenty-two cases of sciatic neuralgia there was complete relief with more or less rapid return of weakened or absent reflexes. Leonard applied roentgen rays over the forehead and parietal area in a severe case of migraine with suppression of the neuralgic pain in later attacks, the abdominal symptoms yielding more slowly to diet and rest. Babinski and Delherm, Zimmer and Cottenot, and Delherm and Py have reported successful results in many cases of trigeminal, occipital, brachial and sciatic neuralgia, as well as in cases in which localized pruritus or paresthesia were the only evidence of disturbance of the nerves.

Whether this prompt and usually complete relief of pain in a large proportion of cases of neuralgia is only another example of the effect of irradiation on inflammatory tissue, which is usually the primary cause of disturbance of the nerve, or whether this reaction is evidence of a peculiar depressant or restorative effect of irradiation on function of the nerves, is of particular interest in view of the reports of Bordier and others of the efficacy of irradiation in cases of poliomyelitis and in certain cases of progressive muscular atrophy.

I have attempted to compare the analgesic response obtained in certain cases of sciatic neuralgia with the result in two types of neuritis in which the pathologic changes have been relatively well established, namely, diabetic neuritis and herpes zoster.

In the Mayo Clinic such irradiation has been applied to the spinal cord at the level of origin of the nerves supplying the involved area, together with the adjoining dorsal ganglia and root areas of the nerve trunks. In most cases the irradiation was of moderate penetration, that is, produced at 135 kilovolt tension with a filter 4 to 6 mm. aluminium over either one field covering the spine and the immediately adjacent areas laterally, or with two converging fields focusing on the spinal cord and posterior root

ganglia. A few patients were treated at 200 kilovolt peak tension with a 0.75 mm. copper filter.

#### DIABETIC NEURITIS

Evidence of neuritis affecting usually the lower extremities either through symptomatic manifestation, as pain or paresthesia, or decrease in or loss of deep reflexes, is present in a large proportion of diabetic cases. Williamson in 100 cases of diabetes mellitus found that the tendo achillis reflex was lost bilaterally in twenty-nine cases and unilaterally in six. In two series of 100 cases each representing respectively ambulatory and hospital cases he observed loss of knee-jerk on one or both sides in 14 and 55 per cent, while in the terminal stages of the disease the knee-jerk was absent in 73 per cent of his cases. The pain experienced is usually gnawing, aching or burning, the absence of intermittent sharp attacks of pain together with the usual hyperesthesia and tenderness of calf muscles as contrasted to decreased sensation to pain, distinguishes the pain of diabetic neuritis from that characterizing *tabes dorsalis*; similarly the absence of motor paralysis, such as drop-foot, affords distinction from alcoholic neuritis.

In several cases on record, degenerative parenchymatous neuritis in the peripheral nerves has been described. Williamson, in the examination of a case of long-standing diabetic neuritis, was unable to confirm the diagnosis although the most minute peripheral nerve branches were not examined. However, degenerative changes in the posterior nerve roots of the lumbar regions were demonstrated, the changes apparently commencing where the posterior nerve root fibers pass through the spinal pia mater, as evidenced by degenerative patches in the medium posterior column of the spinal cord. These changes closely resemble those in *tabes dorsalis*. Nerve changes in diabetes mellitus have recently been studied by Woltman of the Mayo Clinic. I regret that his data are not available for use in the present study.

Williamson has suggested that the increased sugar content of the cerebrospinal fluid in diabetic patients, by long-continued action on the posterior root fibers, may produce degeneration. The most severe neuritic manifestations are usually noted in patients more than forty-five who have suffered from diabetes for many years.

The almost invariable presence of arterioscle-

rosis of the blood vessels in diabetes mellitus must also be considered as a possible factor in producing both pain and paresthesia. Intense pain with exercise such as walking a short distance, suggesting intermittent claudication, was experienced by two of the patients in the group reported here. The frequency of diabetic neuritis of a severe degree has been notably decreased since the introduction of insulin in the treatment of diabetes, and the neuritic symptoms when present often are relieved by faithful adherence to a properly balanced diet with the administration of insulin.

The eight patients who were referred for irradiation because of severe pain had not been relieved by long careful dietary control. Seven of the patients were between fifty and seventy and the diabetes mellitus had been present for from four to twenty-two years. Arteriosclerotic changes were the rule; inflammatory complications such as hypertrophic arthritis, bursitis, osteomyelitis and perirenal abscess were present in some cases.

Four of the eight patients did not show favorable response to irradiation. Two of these patients experienced most intense pain on exercise, such as walking for short distances, suggesting that circulatory changes similar to those occurring in intermittent claudication played the predominating rôle. Both patients also suffered from tingling and numbness or a dull gnawing ache in the toes and feet. While no conclusive result could be attributed to irradiation in either case, one patient, from a combination of vaccine administration, diathermy, massage and irradiation, gradually derived some amelioration of pain although the paresthesia remained unaltered. The third patient, a man aged sixty-two, had had diabetes for five years and pains in arms, legs and across the chest for eight weeks; he also suffered from hypertrophic arthritis of the spine and advanced myocardial degeneration. There was no improvement from irradiation during a seven-day period of observation; since then no report of his condition has been received. The fourth patient, a man aged fifty-nine, with fifteen years of diabetes, said he had been relieved immediately of intense sciatic pain with roentgen-ray treatment eighteen months previously. For two years sensation over the feet had decreased which had been brought to the patient's attention by occasional severe burns from hot water bottles. These burns were always slow in healing. Shortly before admission pain and swelling in the left arm and aggravation of the diabetic condition had appeared with renewed pain in the lumbar area and posterior part of the thighs. A roentgenogram of the left shoulder showed destructive arthritis. Irradiation in an attempt to relieve the pain in the lumbar region and leg was without improvement. The increasing seriousness of the patient's condition necessitated surgical drainage of the area of osteomyelitis on the left humerus, from the shock of which the patient was unable

to rally. At necropsy there were multiple abscesses of the kidneys, heart and lungs, and osteomyelitis of the humerus.

The fifth patient, a woman aged fifty, had been under treatment for diabetes for six and a half years; she was temporarily relieved of intense pain of two years' duration in the right arm and shoulder and in the leg. Before treatment an associated inflammatory condition, presumably peri arthritis in the right shoulder, was recognized. Practically complete relief of pain lasted for a few weeks, when recurrence in the shoulder was the occasion of an exploratory incision and removal of an infected bursa. Later reports from this patient are not available.

Two patients, one with severe multiple neuritis, the other with pain limited to the posterior aspect of the right leg from the sciatic notch to the head, had shown gradual improvement with careful diet, removal of foci and use of other forms of treatment. Unmistakable improvement from irradiation was evidenced in both cases in from twenty-four to forty-eight hours after treatment.

The eighth patient, a woman aged thirty-six, who had suffered from severe diabetes for two years, had been unusually negligent of diet restrictions and general regimen. Pain in the feet and limbs associated with numbness, stumbling in walking or climbing stairs, had existed for six months. This had increased in severity and prevented any rest, so that the patient had adhered rigidly to the prescribed diet and insulin administration for two months with, however, only slight improvement. Irradiation was applied without immediate relief and the patient failed to report again or to follow instructions. When she was observed two months later, pain had been absent for some time but numbness and paresthesia persisted.

*Comment.*—In this small group of cases with, unfortunately, rather inexact observations, there are no doubt a few instances of definite amelioration of pain of diabetic neuritis by irradiation of nerve root areas. Paresthesias have been slightly if at all affected, and failure to relieve pain was frequent. The stage of the diabetes and the amount of superimposed infection or trauma may be significant in these cases. The essential factor in prevention or relief of diabetic neuritis is evidently faithful adherence to a proper dietetic regimen, removal of infectious foci, and avoidance of trauma to tissue. If severe neuritis is present, radiotherapy is worthy of trial, and, with careful selection to eliminate infectious complications, there is perhaps a 50 per cent probability of a degree of alleviation.

#### HERPES ZOSTER

The long-continued intense pain following the acute eruption of herpes zoster is well known and, since herpes occurs most frequently in el-

derly or debilitated patients, the pain with resulting insomnia and loss of appetite is often serious. Von Bärensprung, in 1861, discovered that in herpes zoster the primary lesion lies in the posterior root ganglion of the spinal nerve or in the gasserian ganglion of the fifth nerve. This has since been confirmed by Campbell and Head (1900), who describe herpes zoster as "an acute toxic infection of the posterior root ganglion, exactly allied to anterior poliomyelitis, and occurring often in epidemics which seems to have some dependence on seasonal changes." They found the changes in the ganglia to consist of (1) acute inflammation with exudate of small round deeply staining cells, (2) extravasation of blood, (3) destruction of the ganglion cells and fibers, and (4) inflammation of the sheath of the ganglion. If the eruption has been moderately severe, all traces of inflammation present in the acute stage may pass away and leave an apparently normal ganglion, whereas in very severe cases a scar in the part of the ganglion affected and thickening of the sheath will remain. Some observers have reported cases which would seem to indicate that peripheral neuritis or perineuritis may also cause herpes zoster and that changes in the ganglion are secondary. The extremely interesting observation of herpetic eruptions exactly resembling the usual disease picture in which pathologic examinations have disclosed microscopic invasions of the dorsal ganglion by metastatic malignant cells, and the presence of lymphocytosis in the cerebrospinal fluid during the acute stage of herpes zoster, would indicate that the primary seat of the disturbance lies in the ganglion.

If delayed resolution of the inflammation within the ganglion were the basis of pain, the condition theoretically should prove unusually susceptible to irradiation over the point of exit of nerves from the spine or into the gasserian ganglion. The results in three cases scarcely fulfill this expectation.

A woman, aged seventy-three, who had had diabetes controlled by careful diet during the last three years, suffered an acute attack of herpes zoster extending from the right lumbar area posteriorly and to the lower abdominal and inguinal areas anteriorly. The onset had occurred six weeks before the patient reported at the Mayo Clinic, and since then the pain was so intense that morphine was required. Remaining areas of discoloration and crusting in the skin confirmed the diagnosis. Roentgen rays applied to the lower dorsal

and lumbar spine resulted, after four or five days, in distinct relief. After three weeks there was a return of slight pain and a burning sensation in the skin of the abdominal wall and a second treatment was given. The pain was apparently fully relieved at the time of the patient's dismissal a few days later. However, the pain returned gradually and a report six months later indicated that it was still annoying, always accelerated by increased fatigue and nervousness.

Two patients with herpes ophthalmicus experienced similar symptoms of sudden intense burning pain in the eye with irritation of the cornea, followed in a few hours by intense redness and swelling of the lids and skin about the orbit, and herpetic eruptions. One patient had been anesthetized with ethyl chloride and there was temporary relief but recurrent pain led to the application of roentgen rays through two areas over the orbit centering toward the gasserian ganglia. Within the three weeks between the first and second applications of roentgen rays the pain increased rather than decreased. The second treatment resulted in immediate distinct relief for a week; the pain then gradually returned. A third treatment a month later resulted in local irritation and aggravation of pain, and was discontinued. Three months later the condition was much improved. The other patient felt better within forty-eight hours after irradiation, and on the fourth day obtained practically complete analgesia. During the ensuing four months slight inflammation about the eye persisted but severe pain was not present.

#### SCIATIC NEURALGIA

In contrast to the infrequent and dubious results attained in cases of diabetic neuritis and residual pain following herpes zoster is the prompt and distinct relief noted in sciatic neuralgia. The extent to which the nerve may be diseased in conditions of neuralgia is not known. Certain authors regard neuralgic pain as the initial symptom of definite neuritis which, if the course is benign, remains the only symptom, but if the condition is progressive is accompanied later by change in reflexes, atrophy of the muscle or sensory disturbances. The primary cause is admittedly extrinsic in most cases, the nerve irritation arising from compression of the nerve by tumors or inflammatory swelling, or by direct extension of articular or periarticular inflammatory processes. Déjérne stated that the symptoms of certain root inflammations of the lumbosacral areas are identical with those of ordinary sciatica, but Sicard, in a study of thirty-seven cases of sciatica, did not observe an instance of definite lymphocytosis of the spinal fluid, which is so characteristic of root inflammation. Sicard believes that inflammation of the

true root is rare in a strictly limited area and that in sciatica, for example, such inflammation would overrun the field of crural and sacral nerves, whereas the disturbance is sharply limited to the fifth lumbar and first and second sacral nerves, and does not spread to the internal pudental plexus. Sensory disturbances in the retrosacral region occur frequently in sciatica from participation of the postsacral nerves. Sicard concludes that the cause of sciatica is usually extraneous, whether due to cellulitis, periostitis, or other forms of external irritation or pressure, and that this disturbance usually originates in the funicular part of the nerve as it traverses the vertebral foramen, although pressure from the same causes may be exerted in the region of the greater sciatic notch and manifest the same symptoms.

From a histologic study of one case of sciatica Sicard found the nerve stem distinctly infiltrated with a gelatinous edematous material at the level of the greater sciatic notch, and that this infiltration extended to the level of the vertebral foramen, involving especially the fifth lumbar and first sacral nerves. The intrameningeal root was normal. The sciatic nerve was enclosed in thickened perineureum; the blood vessels were slightly dilated but did not show change in their walls. This case appears similar to a case of primary sciatica reported by Thomas. The possibility of malignant growth exerting pressure on nerves directly or through destruction of tissue must always be borne in mind when the etiology is obscure. The fact that most cases of neuralgia respond to irradiation over the nerve at the point of exit from the vertebral column indicates that the exciting cause usually lies in this vicinity. If radicular irradiation is not successful, later irradiation along the course of the nerve is recommended by Delherm and Morel-Kahn. In the five following cases radicular irradiation only was used.

Three of the five cases reported here are associated with chronic infectious arthritis and the nerve irritation may be interpreted either as extension of this inflammatory process or resultant pressure from periarthritic swelling. In only one case did the neurologists substantiate a diagnosis of neuritis on objective data; in one case, thorough examination was not possible on account of ankylosis and muscle pain.

A man, aged thirty, had been bedridden for three

years with generalized chronic infectious arthritis so severe as to require immobilization on a Bradford frame. Voluntary motion was limited to facial muscles, hands and forearms. There had been an attack of superimposed sciatic pain in 1925, and another severe attack in the autumn of 1927. The pain was so agonizing that the patient was unable to eat or sleep. Roentgen-ray treatment to the lumbar spine resulted in complete relief within twenty-four hours. Freedom from pain, except for the usual muscle soreness, continued for about three months; recent twinges of pain in the limbs have indicated a possible imminent recurrence.

A woman, aged fifty-three, presented a diagnosis of chronic infectious arthritis involving the sacro-iliac joint. She had noticed soreness in the lower part of the spine after sitting for a short time (five months before admission to the clinic), which became severe pain two months later, radiating down the posterior aspect of the right leg to the heel. Since then she had been confined to her bed. The pain was somewhat relieved by the application of heat, and one devitalized tooth had been removed. Roentgenograms of the spine and pelvis were negative. No signs of cord lesion were found. The Achilles reflex was somewhat reduced. The patient was improving slowly with diathermy and massage when irradiation was given, which resulted promptly in unmistakable improvement although not complete relief. When she was dismissed one week later she was able to walk about and suffered only slight discomfort.

A woman, aged sixty-six, had been under treatment previously at the Mayo Clinic for sinusitis and general debility following a severe attack of influenza. On her second admission six months later she was on crutches and complained of severe pain on the left side radiating in twinges from the sciatic notch down the posterior thigh and calf to the foot. The pain had been present two months and had confined her to her bed for more than five weeks; it was aggravated by weight on the left foot. Rest at night was greatly disturbed by constant pain. A moderately severe left foot-drop was present. A diagnosis of neuritis of the lumbosacral cord, probably secondary to disease of the spine, was made by the neurologist. Roentgenogram of the spine revealed bilateral sacralization of the transverse process of the fifth lumbar vertebra with slight hypertrophic arthritis of the sacro-iliac joints. Following irradiation with a half skin erythema dose of roentgen rays at moderate tension, the patient reported the first good night's rest in two months. The pain was relieved. A second treatment was given the following day.

A man had been examined at the clinic in 1925 on account of pain following the course of the sciatic nerve which had seemingly been induced by long hours of horseback riding necessitated by his occupation. For years, however, he had noted paresthesia of the legs and a sensation of intense cold and numbness extending from the feet to the hips. In 1925 infected tonsils were removed and the patient improved somewhat but was never entirely relieved. Nine months before the sec-

ond admission an injury over the lumbar spine had aggravated the pain in the back and legs. Various methods of treatment were applied without relief. Pain disappeared within twelve hours after irradiation of the lumbar and sacral spine, and remained absent for several days. Since the patient's dismissal further report on his condition has not been received.

A woman complained of pain of the peroneal and calf muscles of three years' duration. The pain gradually extended to the thigh and finally was associated with severe backache; it was relieved by prolonged rest in bed but the patient's attempt to return to her usual activities brought on a recurrence. Roentgenograms of the spine and pelvis and neurologic examination did not reveal abnormalities. A clinical diagnosis of chronic infectious arthritis and sciatica seemed warranted from the symptoms. An infected tooth was removed and pyorrhea treated. During the application of diathermy slow improvement was noted, while irradiation over the spine relieved much of the pain.

#### SUMMARY

A study of the analgesia produced by irradiation in eight cases of diabetic neuritis has shown only partial and gradual relief in about half the cases. In three cases of residual pain following herpetic inflammation temporary relief occurred in one case, gradual improvement in one, and in one, with the exception of a few days of freedom from pain after the second application, the treatment seemed rather to aggravate symptoms. Five cases of sciatic neuralgia, most of which were associated with chronic infectious arthritis (only one case affording objective data on which to base a diagnosis of actual neuritis), illustrated in each case the effectiveness of irradiation in securing relief of pain, usually within from twelve to twenty-four hours.

More comprehensive data with regard to the effect of irradiation in different varieties of nerve and inflammatory lesions must be assembled before a possible interpretation can be reached (from a clinical point of view) of the underlying mechanism by which pain is alleviated. Because of the freedom of this method of treatment from any injurious effect or tedious administration, and the gratifying result as yet unexplained in many dissimilar conditions, the use of the roentgen ray for securing analgesia is worthy of trial in all cases of severe pain.

It is to be emphasized that the irradiation required for this purpose lies well within the limit of tissue tolerance, and in this field in which there is clearly no indication for intensive irradiation.

tion, the radiotherapist has a responsibility in the avoidance of radiodermatitis, the occurrence of which even in first-degree stages has done so much to prejudice the general public against the therapeutic use of roentgen rays.

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# OPERATIVE TREATMENT OF FRACTURES WITH REPORT OF SERIES OF HUMERAL FRACTURES\*

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THIS paper is based on a series of fractures treated at the Minneapolis General Hospital during April, May and June, 1927, covering 47 cases; but special attention will be given the surgical fractures, which in this series were of the humerus. Of this series 11 were fractures of the skull; 9 were fractures of the femur (2 in the shaft and 7 in the neck); 8 were fractures of the tibia and fibula; 1 in the tibia alone; 1 in the fibula alone; 2 Pott's fractures with dislocation; 1 in the patella; 1 in the os calcis; 1 in the olecranon process of the ulna; and 12 of the humerus (6 in the shaft, 3 in the surgical neck, 2 supracondylar and 1 intracondylar). We are now in the act of passing from the routine, prolonged splinting which was in common use until a very short time ago, to the more radical methods of the present time, which include the use of early passive movements and massage in conjunction with removable splints, and the practice of open incision in appropriate cases. Various methods are in use for bringing ends of fractured bones into apposition and holding them in place until bony union has occurred. The best form of internal fixation for the special case cannot be known in advance of the actual exposure of the facts involved. Compound or open fractures have always received some form of operative treatment, if only to the extent of cleaning the site and putting the parts into favorable position, and complicated fractures have frequently received such treatment, so that the application of a somewhat more radical operative treatment than heretofore to these classes of cases is not so distinctly new; but the operation treatment of simple fractures is a new field brought up in surgery during comparatively recent years.

The special objects accomplished by the open operation in fractures, in those cases where it is indicated, are: (1) the ends of the bones may

be actually approximated while in view; (2) the ends may be permanently fixed in normal position by whatever means chosen; (3) fractures which cannot be reduced at all by the ordinary methods can be reduced by an open operation; (4) many fractures which are reducible by the ordinary methods only with difficulty and uncertainty can be reduced with ease and accuracy; (5) the ends of many fractured bones not capable of being retained in position are easily retained by internal fixation; (6) ankylosis is often avoided in fractures near to and involving joints; (7) all tissues intervening between the ends of the bones can be removed; (8) injury done to the neighboring structures may be repaired—as, for example: torn nerves may be sutured, compressed nerves can be freed, divided vessels ligated, spiculæ of detached bone removed; (9) the amount of callus is generally lessened; (10) deformity is less frequent; (11) shortening is frequently prevented; (12) and lastly the period of disability can be lessened frequently by one-third.

Operative treatment is fully warranted therefore and should be unhesitatingly undertaken where the reduction of the fracture and the retention of the bone in fair position by simpler means are impossible. As for the time best suited for operating there is difference of opinion, some believing it should be done at once and some taking the advice of John B. Murphy and desiring to wait for a period of a week following the injury. After the field is opened some form of mechanical fixation can be decided upon, preference being given to some technic not involving the retention of non-absorbable material. The judgment of the writer would be distinctly in favor of kangaroo tendon or 30 to 50 chromic catgut in the smaller bones because these substances are absorbable, and this method has a wider range of applicability to the various fractures of the body than any other. Next to kangaroo tendon are bone grafting or bone splints, the third choice being some form of metal plates

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or bands as Lane plates or Parham bands. The sliding bone graft of Albee is a distinct advancement and is being used more frequently than ever before. The so-called Lane technic of no hand contact is of vital importance in this work.

The subject of preparing for an operation is an important one. Dr. Frederick C. Cotton of Boston advises a minimum of two days preparing for an operation. On the first day the part is shaved, scrubbed with soap and water, disinfected with alcohol (50 to 70 per cent) and dry sterile dressing applied. In from twelve to twenty-four hours later everything is repeated except the shave. Before the operation tincture of iodine is applied or some other equally good antiseptic.

Fractures for routine operation are: (1) fractures of the patella, with separation; (2) olecranon fractures, with separation; (3) fractures of the surgical neck of the humerus, with luxation; (4) hip fractures with dislocation at the hip; (5) dislocation of the carpal semilunar with or without scaphoid fracture, unless reducible; (6) splintered fracture of the radial head; (7) separation of upper epiphysis of the humerus with displacement.



Fig. 1. Case 1. Humerus in aeroplane splint before open reduction.



Fig. 2. Case 1. Open reduction of humerus showing Parham bands in place.

Fractures which are commonly operated on in addition to the above list are: (1) fractures of the femur not reducible with tongs traction; (2) fractures of the humeral shaft, low; (3) fractures of both bones of the forearm; (4) fractures of the lower leg, not reducible or with recurring displacement.

In fractures of the humerus, which is the subject of prime consideration in this paper, we are confronted by more difficulties than in the treatment of fractures in any other bone. This is made partly so because it is alone and is not therefore splinted by a parallel bone which is the case in fractures of the ulna, radius, tibia, fibula, metacarpals, metatarsals, phalanges and ribs.

Fractures of the anatomical neck of the humerus are rare. The lower part of the anatomical neck is completely within the capsule but the upper part is not strictly intracapsular; therefore a fracture of the anatomical neck usually does not result in absorption of the head because enough blood supply reaches the head through the upper part of the capsular ligament to supply it with nourishment. The treatment for this type of fracture is abduction and external rotation of the arm. It is not a difficult type of fracture to treat.

Fractures of the tuberosities of the humerus are usually the result of direct violence. The fragment is pulled upward away from the head and shaft due to the action of the supraspinatus. If the greater tuberosity alone is fractured in addition to it being pulled upward it is also held backward, due to the action of the infraspinatus and teres minor muscles. If the lesser tuberosity is fractured it is pulled inward and forward, due to the action of the subscapularis muscle. The treatment of these fractures is abduction of the arm with external rotation if the greater tuberosity is fractured and internal rotation if the lesser tuberosity is fractured. The tuberosities may also be nailed to the shaft by the use of bone pegs if this procedure is required to gain complete approximation. The aeroplane splint is the most useful appliance for the treatment of these fractures.

Fracture of the surgical neck of the humerus, which is probably the most frequent fracture of that bone, is caused by direct as well as indirect violence. The fracture is frequently impacted, but whether it is or not there is a turning out of the distal end of the upper fragment, caused by the action of the supraspinatus muscle. This turning outward of the distal end of the proximal fragment is also brought about by the impact of the force causing the fracture, if that force is applied by one dropping or falling upon

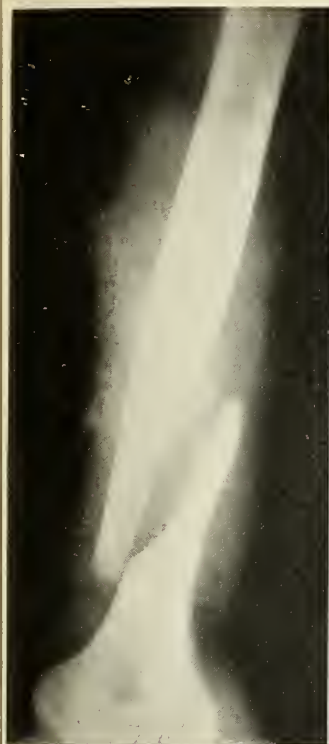


Fig. 3. Case 2. Spiral fracture of distal third of humerus.



Fig. 4. Case 2. Open reduction of humerus with Parham band in place.



Fig. 5. Case 3. Anterior-posterior view of fracture of tibia and fibula before reduction.

the outstretched hand. There usually is no internal or external rotation of the proximal fragment because the action of the infraspinatus and teres minor muscles, which tend to rotate the head outward, is counteracted by the subscapularis, which is inserted in the lesser tuberosity and tends to rotate the head inward. If the shaft is separated from the proximal fragment it is usually pulled inward by the action of the pectoralis major, the latissimus dorsi and the teres major muscles and it is pulled up by the action of the long head of the biceps muscle, the deltoid and the coraco-brachialis. Because of the smallness of the head of bone it is impossible to grasp it and hold it while one is manipulating the shaft and it is therefore necessary to adjust the shaft to the existing position of the head. The treatment therefore is extreme abduction and external rotation held there by traction apparatus if the patient is in bed, or by the application of an aeroplane splint if the patient is ambulatory. By the use of the newer aeroplane splint it is possible to get the arm out at a right angle or an obtuse angle with the body and still have the elbow free so that motion can be obtained from

time to time. This splint is easily removed for the use of passive motion.

For treatment of fracture of the middle third of the shaft, the modified Jones apparatus is especially useful. With it, traction can be exerted on the lower fragment and still the elbow kept at a right angle.

In fractures of the shaft of the humerus, especially in the lower third, some sort of open operation is frequently necessary. This is made so by the fact that the musculospiral nerve is frequently involved and it is frequently impossible by any other means to approximate the ends in a satisfactory manner. In fracture of the shaft of the humerus, paralysis of the extensors due to injury of the radial or musculo-spiral nerve is comparatively common. It lies on the bone in the musculospiral groove in approximately the middle third of the bone. Paralysis may be caused: (1) by direct injury to the nerve at the time of injury; (2) by subsequent changes in the nerve due to its being stretched over the sharp edge of a fragment; (3) by inclusion in callus. Paralysis should be examined for early in the treatment. The symptoms of involvement



Fig. 6. Case 3. Lateral view of fracture of tibia and fibula before reduction.



Fig. 7. Case 3. Lateral view of fracture of tibia and fibula after reduction.



Fig. 8. Case 3. Anterior-posterior view of fracture of tibia and fibula after reduction.

of this nerve are wrist drop, ulnar abduction, diminution of the power of supination and also some sensory changes over the dorsum of the hand and forearm. The musculo-spiral nerve supplies the triceps, part of the brachialis anticus, brachioradialis and extensors of wrist and fingers. The branch to the triceps is given off before it enters the musculospiral groove, hence it is not often injured.

In fractures about the elbow the after-treatment should begin as soon as swelling, pain, and muscle spasm have disappeared, usually at about the end of the second week. It should consist in the use of external heat, massage and exercise. Diathermy also is useful.

Massage is important. It stimulates the circulation, aids the flow of lymph, and releases adherent tissues. Active and passive therapeutic exercises are begun after the first week. After active motion has been well started, it is done against resistance.

I wish here to report in some detail the cases of fracture of the humerus included in this series.

*Case 1.* J. S., a male, aged 24, was admitted to the General Hospital on May 30, 1927, with a comminuted simple fracture of the distal third of the humerus. There was a moderate posterior and lateral displace-

ment of the distant fragment. Immediate treatment was given, consisting of bed traction and suspension with the arm in abduction and external rotation with the forearm flexed on the arm. Traction was maintained for five days; at the end of this time, there was no change in the position of the fragments. An ambulatory aeroplane splint with traction was then tried for the next five days, the displacement remaining about the same with a wide separation of the fragments as seen in Figure 1.

Open reduction was resorted to on the eleventh day. The main trunk of the musculo-spiral nerve as it curls around the lower portion of the humerus was located, and held aside from the operative field. It is usually accompanied by the profunda brachii artery. Three fragments of bone were then exposed, a proximal, distal, and smaller intermediate portion. By manipulation, a perfect anatomical reduction was obtained, the fragments of the humerus being placed in direct alignment and end-to-end apposition. Two Parham-Martin bands were then applied, one to the upper portion of the fracture, and one to the lower portion. A pad of fat and superficial fascia was sutured about the exposed portion of the musculo-spiral nerve to prevent later involvement of the nerve by callus and the wound closed without drainage. A body cast was then applied with the arm slightly abducted and the forearm flexed on the arm. Figure 2 shows the two Parham-Martin bands in place. The patient was free from fever, was ambulatory, and the incision was clean and healed at the removal of the cast four weeks after the operation. Six weeks after operation, there was dense callus formation about the site of fracture, with bony

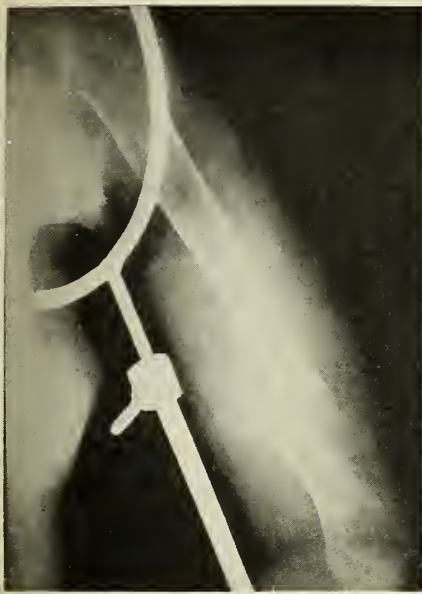


Fig. 9. Case 3. Fracture of humerus before reduction.



Fig. 10. Case 3. Open reduction on humerus showing intramedullary splint in place.

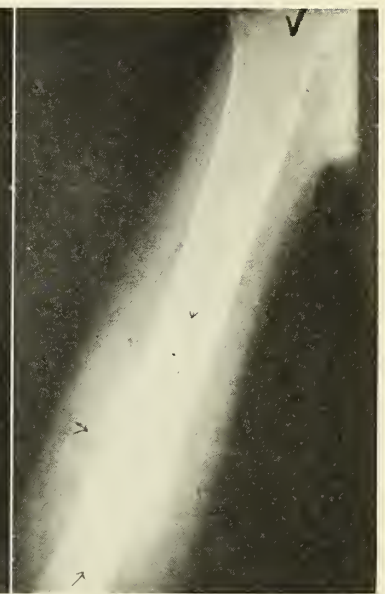


Fig. 11. Case 3. Intramedullary splint in place with callus formation.

union, and a very good anatomical and functional result. There were no findings at any time of either a primary or secondary involvement of the musculo-spiral nerve.

*Case 2.* S. B., a male, aged 20, was admitted to the General Hospital on December 13, 1927, with a spiral fracture of the distal third of the humerus. There was a moderate lateral displacement of the distal fragment with slight separation. The arm was placed in an ambulatory aeroplane splint in abduction. An *x*-ray taken on the ninth day showed complete lateral displacement of the distal fragment of the humerus and one-half inch overriding (Fig. 3). There was no involvement of the musculo-spiral nerve.

On the eleventh day an open operation was performed under general anesthesia. The musculo-spiral nerve was in no way found involved and a small portion of muscular tissue was found between the fragments of the humerus, preventing a closer apposition. This was removed, the fragments approximated and one Parham-Martin band applied, maintaining an excellent position as shown in Figure 4. The wound was closed without drainage and a body cast applied with the arm in abduction. On the tenth day post-operative, the patient was first free and ambulatory.

*Case 3.* B. S., a female, aged 54, was admitted to the General Hospital on April 7, 1927, with a transverse simple fracture of middle third of the left humerus and a comminuted compound fracture of the proximal third of the left tibia and fibula. The fracture of the leg was treated by immediate reduction and sterilization, placed in a pillow splint and on the tenth day in a circular plaster cast. The appearance before and after reduction is shown in Figures 5 to 8. The cast was left on for four weeks and a posterior molded

splint for two weeks more, obtaining a very satisfactory result.

On admittance there was no separation or displacement of the fracture of the humerus. It was placed in a pillow splint for the first three days. At this time a wrist drop was noticed and the characteristic findings of musculo-spiral nerve paralysis were present. The arm was then placed in a Jones ambulatory humeral splint with traction on the arm and support for the wrist drop. An *x*-ray taken on the sixth day showed a complete medial displacement of the distal fragment of the humerus, with about 1 inch overriding as shown in Figure 9.

On the ninth day an open reduction was done on the humerus, using an intramedullary tibial transplant taken from the anterior surface of the right tibia. The transplant was one quarter inch square and 3.5 inches long. It was forced into the medullary cavity of first the distal fragment and then the proximal fragment of the humerus, obtaining an end-to-end apposition and an excellent alignment of the fragments.

The musculo-spiral nerve in this case was found lying in its usual position between the triceps and brachialis muscles. There was no severing or laceration of the main trunk of the nerve and the branches to the triceps and brachialis muscle were intact. There was, however, a contusion and pressure on the nerve trunk from the lower fragment of the humerus. The nerve was thoroughly freed and a pad of fat and superficial fascia sutured about the nerve trunk. This was undoubtedly a recent injury of the nerve sustained at the time of fracture. An *x*-ray taken two days after operation shows the tibial transplant in place and the fragments in excellent alignment and position. A plate taken 5.5 weeks after operation shows the tibial transplant still in place and a large amount of callus for-

mation at the site of fracture, there being by this time a firm union (Figs. 10 and 11).

*Case 4.* A. S., a male, aged 39, was admitted to the General Hospital on November 1, 1927, complaining of a wrist drop of three weeks duration. He had sustained an injury to his right wrist while cranking a car; this was immediately followed by swelling and pain about the wrist and hand. The loss of extension of the hand and fingers was gradual with a resulting complete wrist drop. There was adduction of the thumb, inability to adduct or abduct the middle, ring or little fingers. There was loss of muscular power of the hand and there was some loss of sensation of the hand. The patient admitted having a fracture about the elbow joint at the age of twelve, the exact pathology of which could not be determined.

An *x*-ray examination of the elbow showed a marked amount of new bone production along the articular margins of the ulna at the elbow joint with a marked



Fig. 12. New bone production about elbow joint with exostosis.



Fig. 13. Case 8. Intracondylar fracture of humerus after reduction.

spur formation especially from the coronoid process and from the tip of the olecranon process. There was also a large exostosis extending from the anterior surface of the distal end of the humerus from the region of the inter-cubital fossa (Fig. 12).

A diagnosis of musculo-spiral nerve paralysis was made and operation performed. The musculo-spiral nerve was exposed over the region of the distal third of the humerus and to a point 2 inches below the elbow joint. Just above the elbow it was found to pass over a bony prominence to which it was firmly united by adhesions. The adhesions were cut and the nerve freed. At this point there was a division of the nerve into sensory and motor portions; stimulation of the motor portion caused the fingers to become extended. A fat pad was sutured about the nerve and the incision closed without drainage. The forearm was placed in extension and the fingers and hand in hyper-extension. There was almost immediate improve-

ment after operation so that at the end of one week movement was beginning to return to the fingers and wrist. By the end of the third week the fingers could be moved fairly freely; there was still some impairment of sensation; flexion, extension, abduction, and adduction was present in all fingers, improving daily but not complete as yet.

*Case 5.* H. S., a female, age 21, was admitted to the General Hospital on October 22, 1926, with a comminuted simple fracture of the distal third of the humerus. An immediate reduction by traction and manipulation was done and the arm placed in bed traction and suspension apparatus for three weeks. At this time there was only a slight lateral displacement of the distal fragment, no overriding, and a very good general alignment. A coaptation and a posterior molded splint was then applied and the case made ambulatory. Passive motion started in the fifth week and active motion in the seventh week. At the end of four months practically a perfect functional and anatomical result had been obtained. The callus about the side of fracture at this time was quite dense and easily palpable but at no time was there any evidence of injury of the musculo-spiral nerve.

*Case 6.* R. E., aged 6, was admitted to the General Hospital on May 12, 1927, with a transverse simple fracture of the proximal third of the humerus. There was a complete posterior and lateral displacement of the distal fragment with about 1 inch overriding. Treated with bed traction and suspension for three weeks, the arm being placed in complete abduction and external rotation. During the first ten days there were two unsuccessful attempts at reduction under the fluoroscope. At the end of three weeks early union had taken place, and the arm was placed in a coaptation splint with the forearm in a sling. An *x*-ray plate taken at this time showed a complete lateral displacement of the distal fragment of the humerus with a half inch overriding but with excellent alignment. There was a large amount of callus present at the site of fracture. The patient, seen at the end of seven weeks, showed practically a perfect functional result, good alignment of the arm, callus present, and half inch shortening. There was no evidence of involvement of the musculo-spiral nerve.

*Case 7.* G. T., aged 7, was admitted to the General Hospital on June 20, 1927, with a transverse simple fracture of the proximal third of the humerus. There was complete medial displacement of the distal fragment and overriding of 1 inch. An immediate attempt at reduction under ether anesthesia under the fluoroscope resulted in an improvement, the overriding being corrected down to a quarter of an inch. Bed traction and suspension was then used for three weeks, and the arm then placed in a coaptation splint and the forearm in a sling. An *x*-ray plate taken five weeks after the fracture showed only a quarter of an inch overriding with slight anterior and lateral displace-

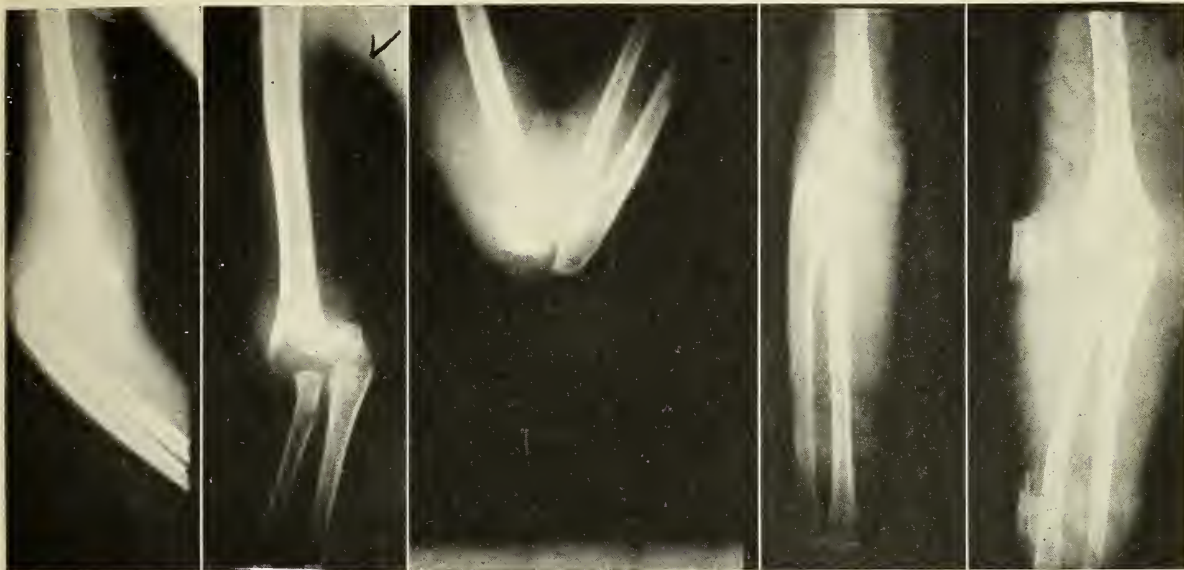


Fig. 15. Case 8. Supracondylar fracture before reduction.

Fig. 15. Case 8. Supracondylar fracture after first reduction; arm in acute flexion.

Fig. 16. Case 9. Supracondylar fracture after second reduction; arm in extension.

ment of the distal fragment and dense callus formation at the site of fracture. There was no evidence of involvement of the musculo-spiral nerve.

*Case 8.* C. D., aged 7, was admitted to the General Hospital on May 6, 1927, with an intracondylar simple fracture of the distal third of the humerus. There was a T fracture with the transverse line involving the inter-epicondylar area, and a sub-periosteal line extending through the mid-portion of the distal end of the humerus into the joint space. There was a marked posterior and slight medial displacement of the distal fragment. Under ether anesthesia, an immediate reduction by traction and manipulation was done, and the arm placed in the position of acute flexion, being immobilized with adhesive. A perfect reduction was obtained by the *x*-ray check-up as shown in Figure 13. Passive motion of the forearm and elbow was started on the ninth day; by the eighteenth day the arm was carried in a sling; and at the end of seven weeks a perfect anatomical and functional result had been obtained.

*Case 9.* F. H., aged 6, was admitted to the General Hospital on May 8, 1927, with a supracondylar simple fracture of the distal third of the humerus. There was a complete posterior and lateral displacement of the distal fragment as shown in Figure 14. Immediate reduction under ether anesthesia under the fluoroscope was carried out, the arm being placed in acute flexion. This resulted in a marked improvement but still left a complete posterior displacement of the lower fragment but good lateral alignment as shown in Figure 15. Two days later a second reduction under anesthesia and with the aid of the fluoroscope was done, this time placing the forearm in full extension on the arm and maintaining immobilization by anterior and posterior padded splints. This resulted in a marked improvement of

the position as shown in Figure 16. Passive motion and massage of the forearm and elbow were started on the eighth day. By the twenty-first day the forearm was in a right angle splint. At discharge on the twenty-fifth day there was flexion at the elbow up to 100°. The patient then left our observation.

*Case 10.* L. D., a male, aged 61, was admitted to the General Hospital on July 10, 1926, with a simple fracture of the surgical neck and greater tuberosity of the humerus. There was no impaction, the shaft was displaced medially and the head of the humerus rotated upward; there was slight overriding. The arm was placed in abduction and external rotation was maintained by traction and suspension for ten days. At the end of this time a triangular humeral splint was used and maintained for the next five weeks. An *x*-ray taken at this time showed a marked improvement, the upward rotation of the head had been corrected, there was no overriding, but a slight outward angulation and considerable callus formation.

*Case 11.* A. M., a female, aged 55, was admitted to the General Hospital on May 24, 1927, with an impacted fracture of the surgical neck of the humerus. Without breaking up the impaction a triangular humeral splint was applied for four weeks, thus maintaining the arm in abduction. Passive motion was started the fourth week and active motion the fifth week. The arm was maintained in a sling for two weeks after the removal of the splint. At the end of eight weeks a fairly satisfactory result was obtained both functionally and anatomically.

*Case 12.* G. D., a male, aged 37, was admitted to the General Hospital on December 25, 1926, with an impacted fracture of the surgical neck of the left hu-

merus. There was a slight posterior displacement of the shaft of the humerus and a rotation of the head of the humerus. The arm was placed in a triangular humeral splint in abduction for three weeks, which entirely corrected the rotation of the head of the humerus and

the displacement of the shaft, resulting in an excellent apposition. During the fourth week the arm was placed in a sling, motion started, and evidence of callus formation noted. By the eighth week a perfect result had been obtained.

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#### REFRACTORINESS TO INSULIN

There is a gradually increasing number of records of diabetic patients who seem to be resistant to the expected remedial action of insulin. In a recent case, a patient proved relatively refractory to insulin for some months, responded only to enormous doses, and slipped into coma or precoma as soon as these doses were reduced. Tests showed that the refractory condition was not due to an inhibitory substance—an anti-insulin—in the blood. The observers of this case are inclined to believe that the peculiar reactions shown by their patient can best be explained by assuming that the diabetes was not due exclusively to pancreatic insufficiency but to the lack of some substance other than insulin and equally necessary for the metabolism of carbohydrates. (Jour. A. M. A., February 18, 1928, p. 549.)

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#### "LYSOL"

Lysol is not the discovery of any one person but was evolved gradually and is a good illustration of the way in which manufacturers appropriate the discoveries of others, develop them and turn them to proprietary use. The ill deserved patent protection for Lysol happily expired long ago and the product can now be made by any one. This cresol-soap solution has been admitted to pharmacopeias, not under the original

name "Lysol" but under descriptive names such as that in the United States Pharmacopeia—"liquor cresolis compositus." In 1912 the Council on Pharmacy and Chemistry published a report in which objection was made to the method of exploitation which tended toward its indiscriminate and ill advised use by the public. The use of cresol in the form of the pharmacopeial product liquor cresolis compositus rather than under a proprietary name is in the interest of rational therapy. (Jour. A. M. A., March 31, 1928, p. 1063.)

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#### AURICULATOR NOT ACCEPTABLE

The Council on Physical Therapy reports unfavorably on the Auriculator, submitted to the Council by Dr. Maury M. Stapler, Macon, Ga. It is stated to be a device for treating certain classes of deafmutism. The apparatus is a slightly different adaptation of a principle that has long been employed in the treatment of tubotympanic adhesive processes. The Council declares the Auriculator inadmissible for inclusion in the list of devices for physical therapy which are acceptable (1) because no scientific evidence has been presented to warrant the claim that it can be used successfully in treating deafmutism and (2) because the descriptive material submitted with the device contains unscientific and incorrect statements as to the causes of deafmutism. (Jour. A. M. A., March 10, 1928, p. 767.)

# POLYCYSTIC KIDNEY WITH CASE REPORT OF SURGICAL TREATMENT

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**P**OLYCYSTIC or congenital cystic kidney is a condition of extreme interest clinically and pathologically. By the above, we recognize a progressive cystic degeneration of the kidney cortex, congenital in nature and with heredity playing an important etiological role. It is an essentially bilateral condition in 90 per cent of the cases, but usually more marked on one side.

The cysts are multilocular, variable in size and number, and have no direct connection with the kidney pelvis. The cyst content is composed of a serous, viscid, albuminous or bloody, at times seropurulent fluid.

The cystic degeneration is progressive, usually over a considerable period of time, with resultant slow but steady compression atrophy of the kidney parenchyma. In uncomplicated cases this continues until the kidney tissue is replaced by connective tissue which forms a skeletal structure of a large functionless kidney mass. Demise of the patient occurs from chronic interstitial nephritis, uremia or causes allied thereto, provided serious complications from intercurrent diseases do not supervene.

## FREQUENCY

According to different autopsy reports, the frequency seems to be about one in every 700 cases.

## HEREDITY

This condition is congenital. Heredity, therefore, plays an important part. One observer traced fourteen proven cases in one family tree. Other congenital defects are often present.

## AGE

Often present at birth, occasionally with such marked kidney masses as to cause trouble in delivery, a fair percentage occur in the early years of fetal life. Otherwise, approximately 50 per cent of the cases appear in the fourth and fifth decades, with very few appearing after the age of sixty. Apparently, therefore, most of the cases showing extensive involvement appear relatively early in young life and progress rapidly

to a fatal termination. Otherwise, the appearance incidence is relatively low until the age of forty or forty-five.

## SEX

Male and female are apparently equally affected.

## ETIOLOGY

1. Virchow propounded the theory, now discredited, of obstruction due to papillitis.

2. The neoplastic theory of epithelial proliferation from tubular irritation does not satisfactorily explain the condition.

3. The malformation theory seems to be generally accepted at the present time. The cortex and medulla of the kidney containing the convoluted tubules and loops of Henle arise from the metanephric anlage of the Wolffian body, while the collecting tubules and pelvis arise direct from the Wolffian duct—two embryological structures, therefore, forming the kidney as a whole. Failure of or mal-union at the time of the beginning of secretory activity of the glomeruli is proven to give rise to cyst formation. Degeneration is a secondary occurrence.

Direct continuity between cysts and tubules seems present, however, in some cases, according to Davis, Bunting, Green and other observers. Mal-union, *i.e.*, cessation of development followed by degeneration, is our most satisfactory explanation of the condition at this time.

## SYMPTOMATOLOGY

The symptoms are variable but depend primarily on the pathological process present and the extent to which it has progressed, with the resultant derangement of kidney function and the effects thereof on the individual patient. The age of appearance governs the symptoms materially. In infancy the prominent factor frequently is the tumor mass or masses, while those appearing later in life usually give the complex of kidney insufficiency or one or more of the variable complications which may arise. Therefore, the symptoms will be grouped under the following headings:

1. Symptoms due to pressure and weight effects. Tumor masses involving right and left kidney regions may be only palpable or may be of enormous size extending across the midline or to the pelvis. They may be hard, firm, and non-fluctuating and usually but not always move with



Fig. 1. Pyelogram, left kidney.

respiration. At birth and in infancy, these tumors frequently fill the abdomen. The effects of these masses in the abdomen are manifested in varying degrees of abdominal discomfort, backache, kidney pain and occasional colic, with constipation and gastric upsets frequently a prominent factor.

2. Symptoms due to chronic interstitial nephritis. As soon as degeneration has progressed to the point where kidney function is impaired, we have the symptom complex of chronic interstitial nephritis occurring with definite regularity. Urinary and blood findings together with secondary circulatory changes of a progressive nature with pre-uremic symptoms gradually lead to uremia, anuria and death from kidney insufficiency.

3. Symptoms due to complications:

(a) Hematuria—the most important—occurs in 40 to 50 per cent of the cases. It may be gradual or sudden in onset; is variable in amount and frequency over short or long periods of time. The bleeding is at times controlled with difficulty, and, as in the case herein cited, may demand radical and heroic treatment. The characteristic but by no means pathognomonic bleeding in polycystic kidney is the irregularly continued passage

of old, dark blood which has been retained in the cysts which finally rupture into the kidney pelvis.

(b) Infection. Infection of ascending or descending type with dangerous pyelitis and occasional abscess with attendant symptoms is apt to occur at any time and may be an obstacle in

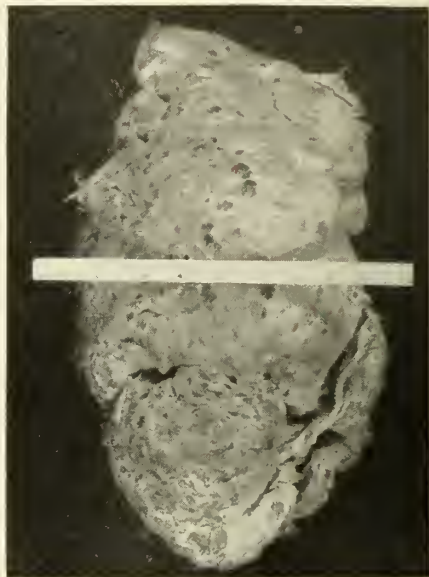


Fig. 2. Gross appearance of left kidney after rupture. Large cysts, upper pole.

the way of diagnosis of the underlying condition.

(c) Lithiasis.

(d) Malignancy.

#### DIAGNOSIS

Diagnosis depends upon a general survey as regards:

1. Age.
2. History of the patient.
3. Physical examination, with signs of tumor in one or both flanks.
4. Urinary and blood findings of chronic interstitial nephritis.
5. Blood pressure. The increase in blood pressure in these cases is of great diagnostic value.
6. Functional tests. These are always definitely diminished and a persistently low P.S.P. of 25 to 35 per cent is very important.
7. Urological survey. Differential functional tests and pyelograms are in many cases the deciding factors in diagnosis.

#### PYELOGRAM

Bearing in mind that the kidney is usually

enlarged in all directions but especially longitudinally, there exists:

1. Characteristic lengthening of kidney pelvis with little or no dilatation of same. With this lengthening and cystic compression comes obliteration of the calices, first usually the middle

echinococcus cysts must be ruled out. Neoplasm seldom occurs bilaterally, and with due regard to symptoms and findings can usually be differentiated; similarly, the same is true of solitary cysts. Hydronephrosis may be bilateral but careful attention to history and urinary findings to-



Fig. 3. Cut section, left kidney.

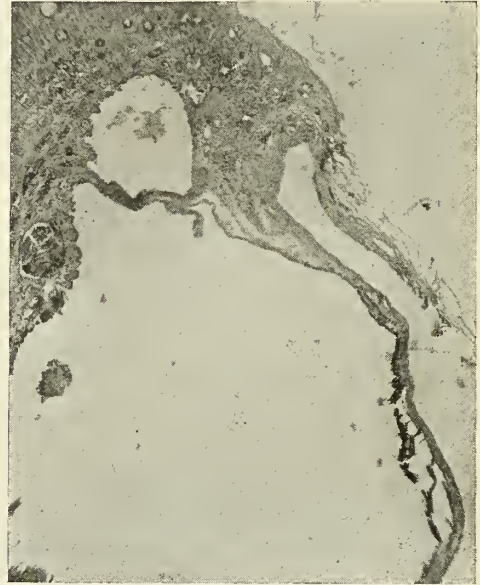


Fig. 4. Low power kidney parenchyma.

calix, giving rise to the "dragon type" of pelvic shadow.

2. Pressure of the cysts on the calices and on the pelvis itself leads to encroachment with widening and blunting of the calices with the typical crescent or saucer-type deformity. At times, the encroachment is such as to give the narrow spider-form calix simulating a neoplasm, but the frequent and characteristic blunt terminations are quite diagnostic. We may consider the pyelogram showing the above as almost pathognomonic. With increasing extra-renal pressure, the resultant pyelographic findings become extremely interesting and at times very bizarre.

Braasch calls attention to further characteristic changes in certain cases where the pressure has caused almost complete obliteration of all calices, leaving an oval type of pelvis; also to changes in the pelvic axis as well as to definite changes incident to inflammation. A most important characteristic, however, is that the pyelogram of the least affected kidney is frequently most pathognomonic.

In the differential diagnosis, the factors of hydronephrosis, neoplasm, solitary kidney cysts and

together with pyelogram should be sufficient. Cases have come to operation, however, where extensive hydronephrosis in the fetal type of kidney causes errors in treatment, but this should not happen if we bear in mind the characteristics of the various factors encountered.

#### PROGNOSIS

An essentially progressive, degenerating, incurable condition exists. The infantile cases succumb early, and those passing the first decade of life we only occasionally meet before the symptoms incident to degeneration, complications or intercurrent disease make the condition known—most frequently in the third and fourth decade.

Length of life after onset of the nephritic syndrome is perhaps two to five years but cases of much longer duration are on record, depending, of course, on the rapidity of degeneration with its attendant kidney insufficiency and the demands imposed upon the kidneys.

#### TREATMENT

The treatment is essentially medical, being directed to the chronic interstitial nephritis, with symptomatic treatment of the secondary diges-

tive, circulatory and other manifestations as they arise. A rigid dietetic regime with intense acceleration of the avenues of elimination will do much to prolong life.

Various forms of surgical treatment have been tried—decapsulation, kidney fixation, nephrotomy, etc., some with a fair degree of success but a large operative mortality. Rovsing's treatment of puncture and evacuation of the larger cysts has given rather pleasing results in a fair percentage of cases.

Treatment of the complications is similar to that in any other kidney. Infections have been benefited greatly by free drainage and to a less extent by antiseptics. Some cases of hemorrhage respond to the administration of coagulants internally, with lavage of the kidney pelvis with silver nitrate or other styptics, but, bearing in mind the pathology present in this condition, we can readily realize the futility of reaching the source of the hemorrhage by injections into the kidney pelvis.

Nephrectomy has been carried out in some cases but is contra-indicated excepting in those cases where complications threaten the life of the individual. The mortality of nephrectomy is 30 per cent. Nephrectomy should never be performed excepting where the other kidney shows a fair functional capacity.

#### CASE REPORT

B. B., a male, aged 23, single, by occupation a book-keeper, was admitted to the hospital Nov. 2, 1927.

Family history, except for the presence of various congenital defects in the maternal side of the family, was unimportant.

Previous disease—smallpox at the age of fourteen.

Former operations—tonsillectomy (age of thirteen years); for hypospadias (age of three years)—unsuccessful.

*Complaint:* The patient was apparently well until three weeks ago, when a sudden onset of hematuria followed moderate exertion. General abdominal distress and a fullness with backache (1) across the kidney region were present. Patient was hospitalized and treated medically, but bleeding occurred intermittently and became rather profuse two days ago. The blood was always rather dark and thoroughly mixed with urine.

*Examination Nov. 2, 1927.*—The patient is a well developed and well nourished adult male of anemic appearance. Weight 145 pounds.

Examination of eyes, ears, nose, throat and chest are negative.

The abdomen is somewhat distended and tender (1) with a moderately rigid left rectus, the maximum ten-

derness being in the left kidney region. The outline can be made out of a definite, hard, firm, non-fluctuating mass moving with respiration and apparently in or connected with left kidney. Murphy percussion is positive on the left, less so on the right.

The genitalia are normal except for a second degree hypospadias with evidence of old operative scars.

Rectum, spine, joints, extremities and reflexes are normal.

Urinalysis: Sp. gr. 1.015, acid, albumin (2) blood (4), pus (3).

Hemoglobin 70, red count 3,550,000, leukocytes 10,400, differential count normal.

Wassermann negative.

P.S.P. 35 per cent in two hours.

Bl. Pr. 140-80.

Blood urea 17 and creatinin 2 mgm. in 100 c.c. of blood.

*Cystoscopic examination Nov. 3, 1927.*—Bladder appears quite normal after being thoroughly washed of old blood. Dark blood emerges from the left ureter. Clear urine spurts regular from the right ureter. No. 6 catheter passed to right and left kidneys. Urine from the right kidney is neutral with no albumin, sugar, pus or blood. Urine from the left kidney is neutral, contains albumin (2), blood (4), pus (2).

Differential P.S.P.: 20 per cent on the right and 6 per cent on the left in 55 minutes.

*Radiogram* shows a large left kidney extending from the upper part of the tenth dorsal to the mid-portion of the third lumbar vertebra, the upper half being much larger than the lower.

The right kidney is slightly enlarged.

*Pyelogram* of the left kidney shows a normal sized, much elongated kidney pelvis with typical encroachment, blunting or flattening and characteristic saucer-type deformity. Upper major calix is incompletely filled with a very little diffusion of the iodide into the parenchyma.

*Diagnosis.*—Congenital cystic kidney.

Nov. 4, 1927.—Urine right and left kidney negative to tubercle bacilli. Culture left kidney shows a mixed colon bacilli and streptococcic infection.

*Treatment.*—Dietetic, various coagulants internally and administration of 20 c.c. whole blood intramuscularly daily.

Nov. 6, 1927.—Patient continues to bleed rather freely and complains of severe abdominal discomfort with anorexia and occasional vomiting. He is losing ground.

Cystoscopy and lavage of the left kidney with 1 per cent silver nitrate.

Pyelogram of right kidney shows a rather definite picture of congenital cystic kidney.

Nov. 10, 1927.—Cystoscopy was repeated and further lavage with silver nitrate as patient continues doing very poorly.

Blood examination November 11 shows red cell count of 2,900,000, hemoglobin 68, white count 11,600 with differential count practically normal.

The diagnosis is quite evidently that of bilateral polycystic kidney with persistent hemorrhage and infection in the left kidney. The hemorrhage being of such an

intractable nature, not responding to the usual methods of treatment and being further complicated by infection, it is deemed best to explore the left kidney with the view of operative intervention toward saving the patient's life.

*Operation.*—Following preliminary saline and glucose infusions November 11 and the morning of November 12, operation was performed under local and regional anesthesia with the administration of a small amount of gas and ether for ten minutes.

Kocher-Mayo incision. A large polycystic kidney, densely adherent to the peritoneum, was exposed. The twelfth rib was resected but the upper part of the kidney could not be exposed, so the eleventh rib was also cut. In the manipulation that followed, the pleura was torn, but was closed immediately with no apparent bad results. After considerable difficulty the pedicle was isolated for safe ligation and the kidney removed. Wound was closed with Penrose drains.

The postoperative condition was fairly good. Subcutaneous saline and glucose saline solutions were administered freely for the first seventy-two hours. Excepting for a rather sudden acute dilatation of the stomach occurring forty-two hours postoperatively, the patient had a rather uneventful convalescence and left the hospital eighteen days later with the wound entirely healed and feeling fine in every respect. Urine contained neither albumin nor pus and only a very occasional red cell.

*Pathology.*—Kidney mass weighs 1,200 grams—yellow, red and bluish in color, irregularly nodular from

numerous large and small cysts with very thin capsule which is ruptured in places, especially at upper pole, where cysts have attained the size of hen's eggs. Cyst content semifluid, yellow and dark, with a large blood clot distending the upper pole of the kidney and communicating with the pelvis, and evidence of infection in the kidney pelvis quite marked. Parenchyma of the kidney, particularly the upper pole, practically destroyed.

Dec. 28, 1927.—Patient has resumed occupation and is feeling well.

P.S.P. 35 per cent in two hours. Urine practically normal.

Patient understands the necessity of a carefully regulated life and will be checked up at intervals.

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#### KALZAN NOT ACCEPTABLE FOR N. N. R.

The Council on Pharmacy and Chemistry reports that Kalzan is the name applied to a double salt of calcium and sodium lactate manufactured by Johann A. Wulffing, Chemical Works, Berlin (The Wulffing Co., Inc., New York, distributor). The product is claimed to have none of the irritating properties of calcium chloride and to possess the advantage of being more readily retained in the tissues than ordinary calcium lactate. This is claimed to be due to the presence of the sodium lactate, which is claimed to increase the alkalinity of the blood and to enhance the ability of the tissue cells to hold the absorbed lime. These claims the Council held not to be substantiated by acceptable evidence. The Council held Kalzan unacceptable for New and Non-official Remedies because it is an unoriginal compound marketed under a proprietary, nondescriptive name; because the therapeutic claims advanced for it are unwarranted, and because its use is irrational and unscientific in that this double salt of calcium lactate and sodium lactate is of a lesser therapeutic value than calcium lactate alone. (*Jour. A. M. A.*, April 7, 1928, p. 1117.)

#### HART'S ALIMENTARY ELIXIR OF BEEF NOT ACCEPTABLE FOR N. N. R.

This product, generally referred to in the advertising as "Hart's Elixir," is stated by E. J. Hart & Co., Ltd., to have the following composition: total solids, 20.75%, total proteids (peptones, albuminoids), 2.65%; carbohydrates, 12.0%; alcohol, by volume, 19.5%; sodium glycerophosphate, to each fluid ounce, 6 grains; potassium glycerophosphate, to each fluid ounce, 6 grains; preservatives used, alcohol and glycerin. This preparation belongs to the class of liquid medicinal foods which the Council on Pharmacy and Chemistry has omitted from New and Non-official Remedies because their usefulness in present-day dietotherapy lacks substantiating evidence. It is "fortified" with glycerophosphates, which are now generally considered of little therapeutic value. It is marketed under a name which is therapeutically suggestive, with claims that are extravagant and misleading, and in a way to lead the public to depend on it for nourishment which it does not contain. The Council declared Hart's Alimentary Elixir of Beef unacceptable for New and Non-official Remedies. (*Jour. A. M. A.*, April 7, 1928, p. 1117.)

## GRADENIGO'S SYNDROME\*

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THE three characteristic features of Gradenigo's syndrome as described by him in 1904 are acute inflammation of the middle ear, pain, especially in the temporoparietal region, and paralysis of the sixth cranial nerve. Gradenigo says briefly that the patients are young, that the otitis media may or may not be accompanied by mastoiditis, and that the ear drum may or may not be perforated. There is severe pain, usually distributed to the temporoparietal region. About one month or more after the onset of the middle ear symptoms, diplopia develops suddenly due to the involvement of the sixth cranial nerve. Optic neuritis is absent. Within about two months of this time, sometimes with operation and sometimes without, the pain subsides and with it the diplopia. Occasionally diffuse meningitis develops and the patient dies.

In discussing the cause of palsy of the sixth nerve, Gradenigo suggests circumscribed purulent leptomeningitis due to a lesion of the bone at the petrous tip spreading to the dura mater. Balance says: "In the majority of these cases, the infection has spread by way of the cells around the eustachian tube and the cellulæ petrosæ to the apex of the petrous, the abscess is extradural, and the nerve is caught just as it pierces the dura."

During the last three years three patients, besides the one whose case is reported here, whose condition was illustrative of Gradenigo's syndrome, have been observed in the Mayo Clinic. Two of the first three patients recovered; one patient developed diffuse meningitis and died.

### REPORT OF CASE

The fourth patient, a man aged 45, came to the clinic in November, 1927, because of diplopia. Two and a half years previously, during the course of an acute cold in the head, infection of the right middle ear developed. The drum was incised and there was discharge from the ear for two months. During the next year and a half, there was frequently a dull pain in this ear, always worse with colds. One year prior to examination, a horse kicked him in the right temporal

region, and he lost consciousness for a few minutes. Swelling appeared behind the right ear but subsided in a few days. A week after the accident he was unfortunate enough to contract a head cold, followed in two or three days by pain in the right ear, and slight fever, which continued for three weeks. About this time, the right side of the face became completely paralyzed. Complete mastoidectomy was performed. The paralysis disappeared rapidly. The wound healed and after four or five weeks the ear became dry. Five months later, because of swelling of the postauricular scar, an incision was made, through which pus drained for five and a half months. Then the discharge stopped entirely. At this time pain which was not severe was noticed behind the right ear, with fever of from 99° to 100°. Five days before examination there was onset of severe aching pain in the right temporal region extending to the right jaw. On the day following, diplopia was noticed, especially on looking to the right. Pain and diplopia continued. There was no vertigo.

On examination the patient appeared healthy, and without much pain. The temperature was normal. The right drum membrane was thick and scarred. The landmarks were obscured. There was a tiny sinus at the lower end of the old mastoidectomy scar, but neither from this nor from the middle ear was there any discharge. The right external rectus muscle was partially paralyzed (graded 3). The left ear and the nose and throat appeared normal. There was little change in hearing in the right ear. Bone-conduction was increased and there was slight conduction deafness.

A few hours after the examination, sudden severe frontal headache developed. The neck was not rigid, there was no Kernig's sign, and the fundi were normal. The temperature was 100°, and in a few hours rose to 103°. Basal meningitis was suspected and lumbar puncture made. The spinal fluid was under increased pressure, and was cloudy, showing 2,500 polymorphonuclear leukocytes and 300 lymphocytes for each cubic millimeter. No organisms were seen in the fresh fluid and there was no growth in the cultures. The following day, the patient's condition had changed little. The headache persisted. The neck was now definitely rigid. Thirty cubic centimeters of spinal fluid was withdrawn. Cultures from this fluid and from fluid withdrawn later were sterile. After the second drainage, there was marked improvement.

Spinal drainage was continued at intervals of from twenty-four to forty-eight hours until, in all, the drainage had been repeated six times. The number of cells in the spinal fluid decreased rapidly. In eight days, the count dropped from 2,800 to 484 cells. The drop was chiefly in polymorphonuclear leukocytes. There was always a large percentage of lymphocytes but these increased actually as the number of the polymorphonuclear leukocytes decreased. The first spinal fluid with-

\*From the Section on Otolaryngology and Rhinology, Mayo Clinic, Rochester, Minnesota. Submitted for publication Feb. 2, 1928.

drawn showed 2,500 polymorphonuclears and 300 lymphocytes. The fluid at the time of the second drainage contained 2,200 polymorphonuclear leukocytes and 350 lymphocytes, and at the time of the sixth drainage 37 polymorphonuclear leukocytes and 447 lymphocytes. The fundi remained normal. Six days after examination, the palsy of the external rectus had almost disappeared.

The patient left the hospital ten days after admission, with mild pain in the right temporoparietal region. The diplopia had disappeared. The ear and mastoid wound had remained dry. During the next month, the only complaints were slight headache, worse when he was lying down, and a sensation of numbness over the right side of the nose and over the right cheek. There was no return of the ocular palsy. Lumbar puncture, one month after dismissal from hospital, showed slightly increased pressure, and a cell count of 24: 1 polymorphonuclear leukocyte and 23 lymphocytes.

#### COMMENT

In all but one particular this case is similar to others reported as illustrative of Gradenigo's syndrome. The trouble with the right ear had existed for two and a half years. Although the more serious symptoms dated back a year, to about the time the patient was kicked by a horse, yet there had been pain in the ear from time to time, especially marked with colds. The relation between the injury received at the time of the kick, and the mastoiditis accompanied by seventh nerve paralysis, is uncertain. Following the kick, the postauricular swelling subsided without earache or other signs of ear trouble. The patient

contracted a head cold seven days after the injury; earache followed and the seventh nerve palsy occurred three weeks later. There appears to have been a definite relation between the mastoiditis and the serous meningitis with sixth nerve palsy which developed eleven months later.

The lesion which caused the serous meningitis, or the meningitis itself, involved not only the sixth nerve but also the gasserian ganglion and even after the meningitis had subsided, irritation of the fifth nerve persisted, possibly due to the formation of adhesions or postinflammatory thickening around the gasserian ganglion. It is difficult to be certain of the manner in which the sixth nerve involvement was produced. It is probable, though, that it was caused by extension of the infection from the middle ear either in the manner suggested by Ballance or possibly by way of the sublabrynthine route, extending from the tympanum by way of the cells, below the labyrinth and the internal auditory meatus to the tip of the petrous bone as suggested by Perkins.

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#### THE WRIGHT TUBERCULOSIS TREATMENT

A Mrs. Carrie Wright was in the "consumption cure" business at Corinth under the names "Wright Tuberculosis Healthorium" and "Carrie Wright T. B. Foundation." Carrie Wright was the wife of one Charles O. Wright, who had been engaged in "consumption cure" quackery for years. The nostrum was sold under various trade names: "The Dr. C. O. Wright Co.," "Wright Ricks Drug Company," "Wright-Duering Antitoxine Company," "Wright Chemical Company," and probably others. The A. M. A. Chemical Laboratory analyzed a specimen of the "Wright's Tuberculosis Treatment" obtained from Corinth, Mississippi, and also a specimen of "Wright's Tubercular Remedy" from the Carrie Wright Foundation at Chicago. From its tests the Laboratory concluded that the first preparation is essentially a water-glycerin solution to which caramel has been added and that the second specimen appeared to be identical with the first. (*Jour. A. M. A.*, April 7, 1928, p. 1141.)

#### USE OF LENS ANTIGEN IN CATARACT

The successful cure of cases of incipient cataract by the injection of lens antigen as proposed by A. E. Davis is yet to be reported. In 1924 the Council on Pharmacy and Chemistry considered the evidence available and found it insufficient to permit recognition of the product. In the six years that have elapsed since lens antigen was first proposed for use in the treatment of cataracts there has been no scientific corroboration of Davis's alleged results. (*Jour. A. M. A.*, April 14, 1928, p. 1239.)

#### REMEDIES FOR SEASICKNESS

It has been reported that sodium nitrite is of value in the treatment of seasickness. A support of this method comes in a report that glyceryl trinitrate—which acts as a nitrite—was found to prevent and cure seasickness. (*Jour. A. M. A.*, April 28, 1928, p. 1381.)

## URETERAL STRICTURE IN THE FEMALE\*

LEE MONROE MILES, B.S., M.D., F.A.C.S.

*Saint Paul*

OUR conception of ureteral strictures is very recent in origin. Kelly<sup>1</sup> in 1902 wrote as follows, "It is a little strange that although enough has been written about strictures of the urethra to fill volumes, practically nothing, next to nothing practical, has been said about strictures of the ureters." He then went on to describe strictures of the ureters as due to inflammation of the ureters by the common pyogenic organisms and outlined the methods of diagnosis and treatment.

It is true that strictures of the ureters had been known and described in the older literature, but these strictures were classified chiefly as congenital or traumatic and most of the reports were based on autopsy findings or on reports of findings at operation. Very few cases were intentionally diagnosed during the life of the patient.

It was not until Hunner<sup>2</sup> published in 1916 a report of fifty cases of ureteral stricture in the female, that the attention of the profession was called to the two most important features of this condition, namely the frequency of its occurrence and the exact nature of the inflammatory process which is the cause of it. A storm of protest followed Hunner's epoch making paper and it was not until numerous other urologists began to use his methods of diagnosis and applied his criteria for strictures of the ureter that the sound basis of his work was established. Indeed so clearly and exactly has he presented his work that whatever of scepticism there may be in the mind of the profession is cleared away if an honest attempt is made to apply the methods of diagnosis with which he has developed.

Ureteral stricture is a condition in which the lumen of one or both ureters is narrowed to the extent that the outflow of urine from the kidney to the bladder is impeded at one or more points. This narrowing of the ureter is due: (1) to an inflammatory process originating in the urinary tract, *i.e.*, intrinsic; (2) to an inflammatory process in the peri-ureteral tissue involving the

ureter by extension or constricting it as a result of scar formation (this presupposes an extra-renal focus of infection); (3) to mechanical obstruction caused by tumors, pregnancy, torsion, adhesions, or surgical interference. Hunner is of the opinion that the most frequent causative factor is the presence of a focus of infection in the tonsils, teeth or sinuses. However, because of the fact that strictures of the ureter occur with much greater frequency in females than in males we should look for the cause of this in a source of infection or a focus of infection which occurs in the female and not in the male. There would seem to be good evidence pointing to the cervix uteri as a likely focus of infection. The location of the strictures in the broad ligament region most frequently and the extreme prevalence of other evidence of infection in the peri-ureteral region such as the presence of calcified lymph glands and phleboliths would point at a local rather than a remote focus of infection.

Strictures may occur at any point in the course of the ureter but the most frequent sites are in the broad ligament region and in the region of the iliac group of lymph glands just below the point at which the ureter crosses the pelvic brim. Strictures may frequently be located in the bladder wall region and occasionally in the lumbar portion of the ureter or at the junction of the ureter with the pelvis of the kidney. Strictures rarely occur at the sites of normal anatomical narrowing of the ureter. A great majority of strictures are bilateral.

The local pathology at the site of the stricture has been described only in a few cases. Hunner and Wharton<sup>3</sup> have reported the findings in seven cases, the material being either operative or from autopsy, in which a diagnosis of ureteral stricture had been made during the life of the patient. The stricture is composed of a thickened ureteral wall with the formation of dense fibrous tissue and round cell infiltration. The mucosa is intact in some cases and destroyed in others. In case 2 of this report the ureter was examined at the site of the stricture. The wall of the ureter was thick and fibrous and the mucosa was absent.

\*A Contribution from the Department of Obstetrics and Gynecology of the Peking Union Medical College, Peking, China, with additional cases. Presented before the staff of Saint Luke's Hospital, and Midway Hospital, St. Paul.



Fig. 1. Case 1. Pyelogram showing enormous dilatation of the kidney and ureter with abrupt end of dilatation at stricture "s." Note that there is no fluid in the bladder. No. 5 F catheter plain.

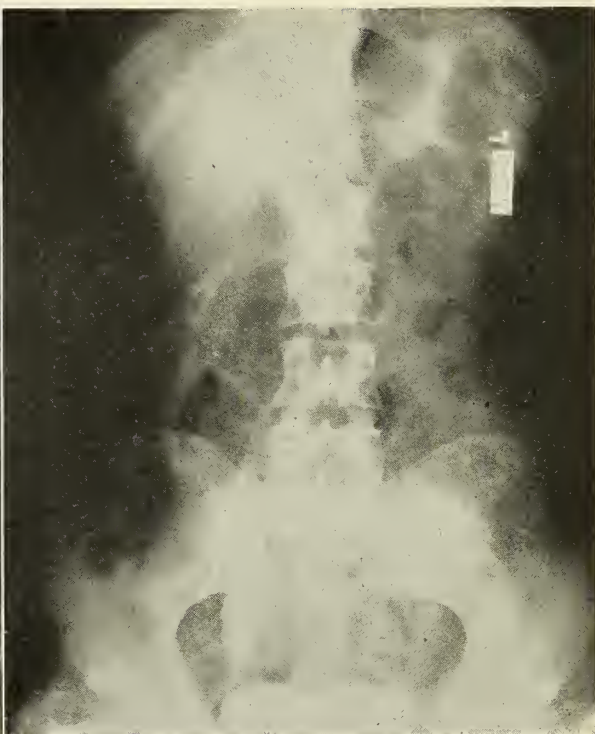


Fig. 2. Case 1. Pyelogram of same patient after dilatation of stricture with bulb catheters. Free returns of fluid to bladder around a No. 8 F. catheter.

The pathology of the ureter above the stricture area is essentially a thinning of the structures composing its wall with dilatation of the lumen. The kidney also shows more or less marked pathological changes depending on the duration of the stricture and the degree of narrowing present. Hydronephrosis is the common result of stricture of the ureter with more or less marked degeneration of the renal parenchyma. Probably most distended kidneys sooner or later become infected and we have the added picture of a pyelitis or a pyelonephritis.

Decrease in kidney function in cases of stricture with hydronephrosis has been shown by Hinman<sup>4</sup> and his co-workers to be due to diminished blood supply which causes degeneration of the kidney parenchyma. This diminished blood supply is caused by longitudinal stretching of the arteries with a corresponding diminution in diameter and of course a diminished rate of blood flow. Regenerative power of the obstructed kidney was shown by the same workers to be remarkable following relief of the obstruction provided the other kidney had not already undergone compensatory hypertrophy or, in those cases in which hypertrophy had taken place, if the bur-

den of secretion where thrown on the obstructed kidney by damaging the hypertrophied kidney. Relief of obstruction after the kidney parenchyma had been damaged by long obstruction, without interference with the hypertrophied kidney function, resulted in an atrophy of the kidney.

Pain is the most constant symptom of ureteral stricture. This pain may vary from a constant, nagging pain to the most severe paroxysmal nature. The most frequent location of the pain is in the back in the lumbar region but is frequently in the sacral region. Pain in the lower quadrant or quadrants of the abdomen is the next most frequent site. The pain may or may not be referred by the patient to the urinary tract. It is frequently referred to the digestive tract because of its cramp-like peristaltic nature. Tenderness to pressure which the patient herself notices is a common complaint. Patients frequently say that they have had to discard belts and tight clothing about the abdomen because of the pain. It is not uncommon to find patients whose chief complaint is a sacral backache fitted out with a sacro-iliac belt by some physician, complaining bitterly or unable to wear the belt

because of pressure on the abdomen. One patient complained that when she sat down the roll of fat on her abdomen caused her severe pain. Pain at the menstrual periods is usually worse than at other times though on questioning we find that this is not a true dysmenorrhea but an increased intensity of a pain that is present at other than the menstrual times.

Urinary symptoms may be marked or entirely absent. This depends to a large degree on the extent of bladder involvement. With a concomitant cystitis we find of course, that the patients complain of frequency, burning, strangury; but in a large number of cases the patients will complain of none of these symptoms. In fact they will declare that they have no "bladder trouble" but on questioning we may find that they do have extreme urgency of urination and difficulty in retaining the urine once the urge to void occurs, or they may even have slight incontinence. Violent changes in intra-abdominal pressure as in coughing or sneezing often result in involuntary passage of urine even though the bladder is not full. This is apparently due to the increased pressure forcing the pent up urine past the stricture with resultant bladder contraction.

Remote symptoms such as headaches, vague digestive disturbances, "biliousness," eructations of gas, distention of the bowel are frequent complaints while general malaise and a feeling of being constantly "all in" are almost uniformly present.

Physical examination reveals pain on pressure which may be generalized over the entire abdomen; but tenderness to pressure over certain points of the urinary tract is of greatest importance. These points of tenderness are located as follows:

1. In the kidney regions just below the costal margin in front with counter pressure at the costo-vertebral angle posteriorly. This causes pain which is both local in the kidney region and radiates downward toward the bladder. The lower pole of the right kidney is normally palpable. Enlargements of the kidneys and hypermobility may also be determined by this palpation.

2. Of more importance than the preceding sign is the pain caused by pressure over the points at which the ureters cross the pelvic brim. These points are about one and one-half inches lateral and below the umbilicus. Pressure at these

points causes pain which may be referred either to the kidney or bladder or both. On the right side this point corresponds closely with McBurney's point and if only one side is palpated a diagnosis of chronic appendicitis may be made.

3. Pressure on either side just above the inguinal ligament at the level of the internal ring causes pain and frequently a feeling of a fullness in the bladder.

4. By vaginal examination the base of the bladder may be palpated and in the fornices on each side pressure on the ureter in the broad ligament region causes severe pain. Frequently the ureter can be palpated in this manner and can be positively localized as the source of the pain.

Laboratory examination of the urine may be most deceiving. Catheterization of the bladder should always be done. The urine should be examined uncentrifuged. Finding four or more pus cells per high power field indicates some inflammation of the urinary tract; however the absence of pus cells does not rule out the possibility of a stricture. The same statement applies to the presence or absence of red blood corpuscles. Pus cells will be present only in those cases with intrinsic urinary infection and red blood cells will be present only in those cases with damage to the continuity of the urinary mucosa.

Diagnosis of stricture can be made only by the most painstaking and thorough study of the entire urinary tract. It can not be too strongly emphasized that simple cystoscopy which reveals an apparently normal bladder is not sufficient to rule out lesions above the bladder and conversely a cystoscopic examination which reveals an inflamed condition of the bladder should not be taken as proof that the disease is confined to the bladder. Many cases of chronic cystitis never clear up until proper consideration is given to treatment of the urinary tract that is not visible through the cystoscope.

Catheterization of the ureters, preferably one at a time, is necessary to determine the presence, location and extent of lesions beyond the range of the cystoscope. As a rule predominant symptoms exist on one side and it is my rule to examine that ureter first. The following is my routine in examining a patient for stricture of the ureters.

The entire surface of the bladder is first inspected thoroughly. Lesions are made note of



Fig. 3. Case 2. Pyelogram showing marked hydronephrosis and some dilatation of the ureter. Stricture at "s." Note tortuous ureter at junction of fourth and fifth lumbar vertebrae with dilatation both above and below.

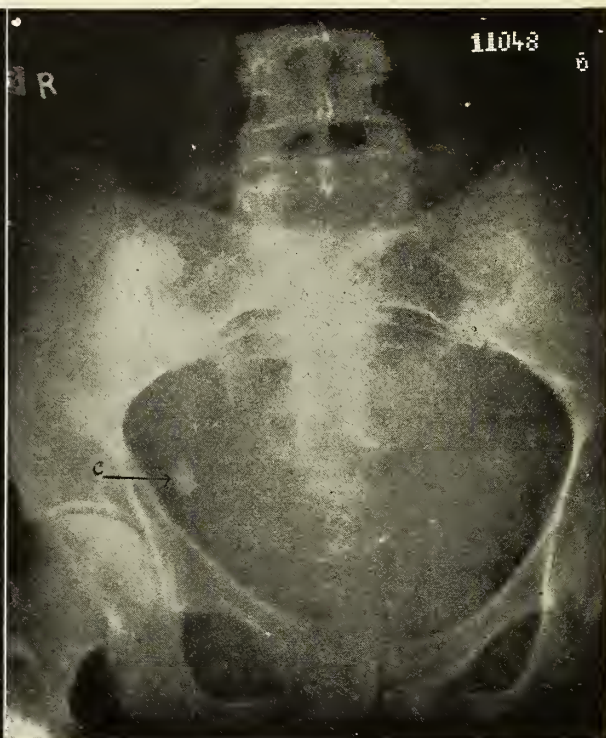


Fig. 4. Case 3. X-ray showing calculus.

and localized conditions such as trigonitis, bullous edema, or localized area of ulceration are treated by direct application through the cystoscope. Then the ureteral orifice is exposed, the character of the opening is noted, the activity and character of kidney secretion is observed and then the ureter is catheterized with as large a catheter as possible. At the first examination this catheter is not quipped with a wax bulb for reasons that will be stated later. Resistance to the passage of the catheter short of complete obstruction is not of great importance because there are a number of factors that influence the resistance to introduction of the catheter such as the friction against the cystoscope and friction of the wire stylet which is held stationary as the catheter is inserted. If a number 8 F. catheter will not pass, smaller catheters are used until one passes to the kidney. Urine secretion is observed and two specimens are taken, one for microscopic examination and the other for culture. The capacity of the urinary tract is next determined by injecting slowly into the catheter some solution which will be recognized as it returns from the urinary tract through a bladder catheter. The injection is carried on until the patient notices a

sense of fullness in the kidney and the amount of fluid injected is noted; also the presence or absence of return flow per bladder. A normal kidney and ureter will hold up to ten cubic centimeters of fluid. Any kidney that holds over twelve cubic centimeters of fluid is dilated to a certain degree.

While the injection of fluid is taking place or after it is completed most patients will volunteer the information that it causes discomfort in the same location and the same character as the "old pain." Questioning the patient who does not volunteer any comments will usually bring out the information that the pain of injection is the same as that which she has previously experienced.

Following the capacity test, the patient, if she is in a hospital, is taken to the x-ray laboratory and films are taken of the entire urinary tract and then the kidney and ureter are injected with a suitable solution and pyelo-ureterograms are taken. Again the volume of solution injected for the films is noted. Examination of the films will show in most instances whether calculi are present or not, and a study of the pyelo-ureterograms will show dilatation of the tract if present to any marked degree and will also demonstrate the lo-

cation of strictures if present and will also demonstrate return flow to the bladder. The reason a plain catheter is used in taking the pyelograms is that if a bulbed catheter were used a stricture might be dilated sufficiently to allow return flow to the bladder and would otherwise obscure the findings. X-ray examination is of particular value in ruling out other renal conditions such as calculi, for it is very common to have a roentgenologist report a normal urinary (normal to x-ray) in which there is demonstrable dilatation by capacity test and other positive cystoscopic evidence of stricture.

The catheter may now be removed or the patient may be returned to her bed with the catheter in place and a renal function test performed estimating the function of one kidney through the renal and the other through the bladder catheter. This is, of course, accurate only in case there is no return of fluid around the ureteral catheter and constitutes the second reason for not using a bulbed catheter at this examination.

Reaction following ureteral catheterization is another important point in the diagnosis. Catheterization of a normal ureter is moderately painful and is followed by cramp-like pains which as a rule disappear in a short time and do not require treatment. Passage of even a plain catheter through a strictured ureter causes trauma and edema which interferes further with the outflow of urine and these patients always have severe reactions. The pain is intense and may stimulate that caused by passage of a calculus. Morphine is almost always required to relieve pain in stricture cases. Most patients, especially those in whom a catheter as large as an 8 F. have been passed, experience a feeling of relief from their old symptoms after about twenty-four hours and feel better than before the ordeal of cystoscopy.

Varying from a week to ten days after the first examination the ureter is again explored, this time using catheters with wax bulbs. A normal ureter will readily admit of the passage of a bulb 5 mm. in diameter. For diagnosis, smaller bulbs are used, passing the largest size that will go through the entire course of the ureter. Again, resistance short of complete obstruction to the bulb are discounted on insertion of the catheter. Instillations are again carried out as before and capacity and return flow are

observed. On withdrawal of the catheter resistance is taken note of and the distance from the external urethral orifice is recorded. This "hang" on withdrawal of the catheter is the most important of all the diagnostic points. The resistance may be very great. Multiple strictures in the same ureter may be encountered and their location estimated with considerable accuracy. Reaction is likely to be severe, but after the stricture has been dilated with a bulb the improvement is noticeable to the patient. The patient can also be assured that the pain following subsequent dilatations will be less severe than the reaction of the first examinations.

The treatment of ureteral stricture, whether there is infection in the urinary tract or whether the urine is sterile, consists in promoting urinary drainage by systematic dilatations of the stricture. In infected cases urinary antiseptics by mouth such as urotropin or hexylresorcinol are indicated. Lavage of the kidney and ureter with mild antiseptics, such as 1 per cent mercurochrome, 1-1,000 silver nitrate or with hexylresorcinol S.T.-3 7 should always be done, in infected cases as a curative measure and in the non-infected cases as a prophylactic measure. Mercurochrome intravenously has not given good results. Cleaning up the foci of infection is a prime requisite in therapy.

Since strictures are more often bilateral than unilateral the other ureter should also be investigated in the same routine manner as the first after treatments have been begun. The relief of symptoms following a few dilatations of the one ureter will give the patient encouragement to go through with the same routine on the other side.

While relief of pain and disability is of great importance of even greater importance is the prevention of damage to the kidney substance that is sure to follow in cases that are neglected. As in every chronic condition, the earlier treatment is instituted the better the prognosis. Once there is marked dilatation of the kidney and ureter as a result of obstruction the kidney function is impaired due to actual degeneration of kidney parenchyma.

Operative treatment is rarely indicated as a treatment of the stricture itself, though it may be necessary to relieve some accompanying condition. In the cases here presented operations were performed in seven of the nine cases but



Figure 5. Case 3. Ureterogram showing injection material in lower ureter and bladder with calculus in ureter.

Fig. 6. Case 3. Pyelogram after calculus was removed and dilatation with bulb catheters had been done. Marked hydronephrosis and hydroureter with tortuous upper ureter, marked ptosis of kidney and unusual outward tilting of lower pole.

in only one was the operation performed to relieve the stricture. The other operations were done for some accompanying or complicating condition.

The prognosis of ureteral stricture depends upon a number of factors. This is essentially a chronic condition and the success of treatment depends to a large degree, as does the prognosis of urethral stricture in the male, upon the tact and persistence of the physician and the perseverance of the patient. The patient naturally wants to know how many treatments she will require for a cure. This can not be answered positively. Usually six to eight dilatations of the strictured ureter providing the bulbs can be progressively enlarged at each treatment until a bulb 5.5 to 6 mm. in diameter will readily pass through the strictured area will suffice to give relief, in many cases permanent and in others over a period of months. Some cases require another series of treatments if the condition recurs. No genito-urinary surgeon feels disgraced if he has to treat a stricture of the urethra over months or even years of time to relieve his patient; certainly no stigma should be attached if treatments of stricture of the ureter take a number of treatments or if they recur after a period of

time during which no treatments have been given. Hunner<sup>6</sup> has reported the end results in a series of 100 stricture cases in which no treatments had been given for a period of at least five years, with 29 per cent, of completely cured, 50 per cent much improved, 15 per cent improved and 6 per cent not improved. In this series the average number of treatments was seven per strictured ureter.

#### CASE REPORTS

*Case 1.* Miss E. P., single, nullipara, aged 34, was seen in June 1922. Complaint; pain and irritation in bladder region for two and one-half years. She had been treated for cystitis in Tientsin, with bladder irrigations, autogenous vaccine and urotropine without result.

Past history unimportant except for appendectomy performed in April, 1920, without relief from symptoms. Cystoscopy performed by Dr. Char of the Surgery Department. No difficulty in passing No. 5. F catheter into right ureter. Normal bladder mucosa except for slight congestion of right ureteral orifice. Left ureter also catheterized at same time. Culture from right kidney showed an atypical colon-typhoid organism. She was cystoscoped and the right ureter was lavaged with 1 per cent mercurochrome on five occasions during June and July, 1922. On the last four

examinations sterile urine was obtained per catheter. No pyelograms were taken at this time. No further treatments were given until December 14, 1922, when she returned because of return of her old trouble. At that time, Dr. Char had pyelograms taken with the result shown in Figure 1. This shows definite stricture of the right ureter near the bladder.

On December 28, 1922, she was referred to me for treatment of the stricture. On that occasion she was cystoscoped and a catheter with a 3.5 mm. bulb was passed with considerable difficulty through the ureter. On withdrawal there was a firm "hang" at 7.5 cm. from the ureteral meatus. This would locate the stricture in the broad ligament region. At this time the same organism that was isolated by Dr. Char was again found present in cultures of the right kidney urine. From December 28, 1922 to April 2, 1923, she had in all six dilatation treatments of the right ureter, the largest bulb used in treatment being 5.5 mm. in diameter. The left ureter was not involved. On two occasions it was investigated and a 4 mm. bulb passed freely without a "hang" on withdrawal. On April 2, 1923, a pyelogram (Fig. 2) was made. Renal function tests showed only slight impairment of the kidney.

End result.—This patient was most difficult to handle, she was a neurasthenic individual and was constantly seeking advice from other physicians. During the time she was under treatment the bladder irritation disappeared, she gained twelve pounds in weight and felt well. Shortly after the last treatment she went on her vacation and during the summer I heard from her that in London she had had a nephrectomy performed by Sir John Walker. In view of the condition shown in the second pyelogram with her generally improved condition it would seem reasonable to question the advisability of performing a nephrectomy.

*Case 2.* Mrs. H. S. married, para (3), aged 32, was admitted to hospital April 18, 1923.

Complaint; pain in the right lower quadrant of the abdomen of five years duration.

Past history—appendectomy eight years previous to admission. Had influenza and pneumonia in 1919. Present illness began suddenly with pain and dragging sensation in the back and lower abdomen. This cleared up spontaneously with the passage of a large amount of urine. Second attack similar to first three years ago. Present attack began during pregnancy and has been continuous ever since birth of child eight months ago. Cystoscopy was done, both ureters catheterized, the left with a plain catheter and the right with a 3.5 mm. bulb. Bladder normal except for inflammation around right ureteral orifice. Cultures negative on both sides. Pyelogram of right side was reported as a normal urinary tract although my note shows that 25 c.c. of solution was injected with no return. Function test showed 35.7 per cent phthalein excretion from left kidney and 34.5 per cent from right. With definite evidence of dilatation of the ureter a diagnosis was made of stricture of the ureter.

This patient was the wife of a missionary in a small mission station in the interior of China and it was impossible for her to remain in Peking for treatment.

However, I saw her twice and dilated the stricture of the ureter in the hospital located in the mission station. One occasion was in February, 1924, and again in May, 1924.

She was readmitted to the hospital on March 27, 1925, with the same complaint as on her first admission. Cystoscopy was again done, the catheter could not be passed to the kidney but was obstructed in the lumbar region. The pyelogram (Fig. 3) was made. This shows marked hydronephrosis with increased mobility of the right kidney and tortuous right ureter. The function of the right kidney at this time was practically nil. There was much pus in the excretion from the right kidney. The kidney was much enlarged and a diagnosis was made of pyelonephritis and a nephrectomy was done on March 31, 1925.

The operation revealed a most unusual condition. The kidney was large and the capsule was found to be separated from the kidney by a bloody fluid so that when the capsule was opened the kidney was almost spontaneously delivered into the wound. The capsule was densely adherent to the surrounding structures and an intra-capsular nephrectomy was performed. The ureter was exposed a distance of 10 cm. from the kidney and at this point it was found to be thick and fibrotic. From the kidney to this stricture it was much dilated. The kidney and ureter to the stricture were removed. Convalescence was uneventful. The kidney and ureter were examined—the surface of the kidney was studded with round cystic elevations and on section through the organ these cysts were found throughout the kidney substance. The cysts varied in size from a few mm. in diameter to 1 cm. The pelvis of the kidney showed grossly the signs of inflammation and ulceration of the mucosa and sub-mucosal hemorrhage. The ureteral wall in the dilated portion measured 2 mm. in thickness, at the site of the stricture it was 4 mm. thick. Microscopically the kidney parenchyma showed marked degeneration and was infiltrated by leukocytes. The mucosa of the pelvis and ureter was absent and there was infiltration by leucocytes and sub-mucous hemorrhage. This picture is very difficult to explain. It may be a congenitally cystic kidney with pyelonephritis as a result of the stricture of the ureter; on the other hand it might be an acquired cystic condition due to blocking of the urine by the stricture.

The patient has remained well since the operation. Had she been able to be treated adequately and frequently after the diagnosis was first made I believe the kidney could have been saved.

*Case 3.* Mrs. C. W., widow, para (3), aged 42, was admitted to medical service October 7, 1925.

Complaint; two acute attacks of pain in right lumbar region, one attack eight weeks and the other three weeks before admission.

Past history—appendectomy twenty years ago, some pelvic operation seven years ago, tonsillectomy three years ago. In a routine x-ray examination three years ago a shadow was seen in the right kidney but nothing was done at this time.

Present illness really dates from early spring of 1925 at which time she had distress in the upper abdomen,



Fig. 7. Case 4. Pyelogram showing two definite stricture, one in the iliac gland region and the other in the broad ligament region. Slight hydroureter. Note ptosis of right kidney.

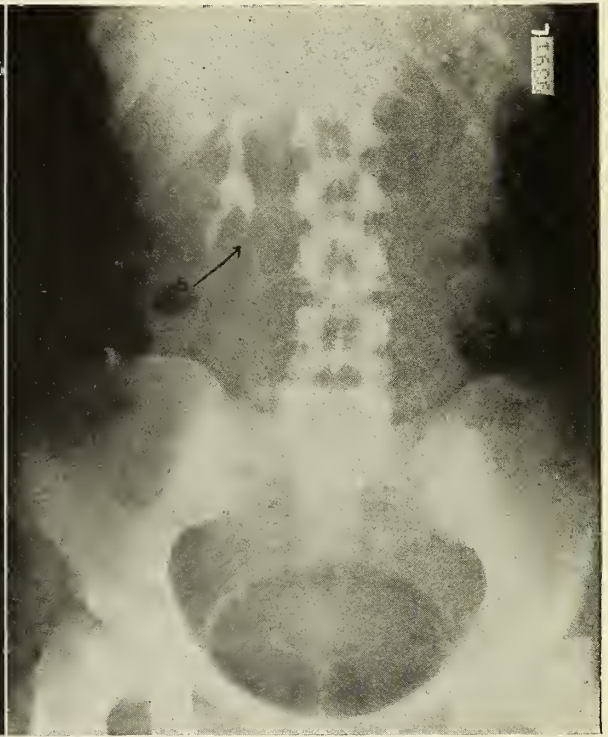


Fig. 8. Case 4. Same after dilating strictures and after the decapsulation operation. Ureter now shows one possible stricture at uretero-pelvic junction. Kidney is now in normal position.

indigestion, "gas pains" and loss of appetite. The sharp attack of pain eight weeks ago was characterized by pain in the right lumbar region radiating to the right thigh and vulva. Physical examination revealed nothing except a large freely movable right kidney. X-ray showed a dense shadow in the region of the ureter in the pelvis (Fig. 4).

She was transferred to Gynecology and was cystoscoped on October 12, 1925. The vessels of the trigone and posterior wall of the bladder were distended, otherwise the bladder was normal. The right ureter was catheterized with a No. 5 F. catheter with a wax tip. It was completely obstructed about 5 cm. beyond the bladder wall. X-ray films were taken after injecting through the catheter and Figure 5 shows the result which, with the scratch marks on the wax tip of the catheter, proved that the shadow was caused by a ureteral calculus about 5 cm. outside the bladder. Operation was performed on October 15, 1925. The ureter was exposed extraperitoneally and was found to be very much dilated at the pelvic brim. It was opened just below the pelvic brim and a stone was removed measuring 14 mm. in length by 8 mm. in diameter. Hegar dilators were then passed through the ureter to the bladder and it was dilated with great resistance up to 5 mm. diameter, the stricture holding very firmly on withdrawal on a perfectly smooth steel instrument. Convalescence was uneventful.

Following recovery from operation the stricture in the ureter was dilated and the urine was cultured. *B. coli* in pure culture were obtained from the right

kidney. On numerous occasions the ureter was dilated and irrigated with 1 per cent mercurochrome and at each occasion there was a positive culture of *b. coli*. The urine was alkalized with sodium bicarbonate, an autogenous vaccine was made and injected, 25 c.c. of 1 per cent mercurochrome equivalent to 5 mg. per kilo of body weight was injected intravenously all with no effect on the organisms until urotropine in gram doses four times a day with sodium benzoate to acidify the urine were given, whereupon the infection cleared up. Figure 6 shows the condition of the kidney and ureter on November 9, 1925, three weeks after operation.

Although the patient dated her trouble from the preceding spring we have the evidence of the previous x-ray that she had had a renal calculus for at least three years. This stone remained in the kidney pelvis until the ureter had become sufficiently dilated as a result of the stricture to enable it to pass through the ureter down to the stricture where it remained with little discomfort to the patient.

*Case 4.* Miss A. J., single, nullipara, aged 31, was admitted to the hospital on January 3, 1925, complaining of severe pain in the right lower quadrant and in the right upper lumbar region. This pain had begun suddenly in June of that year with fever and much pus in the urine. A diagnosis was made at that time by another physician of pyelitis.

On admission she was having acute crises of pain lasting four to five hours. Pain was worse on movement and patient could not endure the jolting of riding in a rickshaw.

Past history—appendectomy in 1914, gastric ulcer diagnosed and treated by diet in 1918, upper abdominal exploratory operation in 1919 at which time nothing was found except adhesions around stomach and gall bladder; tonsillectomy, 1919. During the present attack of pain she has had severe pain in right lumbar region which did not radiate to bladder or down the thigh. She had no fever and bladder symptoms were absent. There was tenderness to pressure along the entire course of the right ureter and the kidney was exquisitely tender to palpation.

She was cystoscoped on January 10, 1925, and a pyelogram was taken (Fig. 7). The right ureteral orifice was pin point in size and a catheter entered with great difficulty. The bladder was normal. Instillation of only 6 c.c. of 1-1,000 silver nitrate solution caused severe pain in the kidney, exactly of the same kind and location as her old pain. Urine cultured at the time of cystoscopy was sterile. Cystoscopy was done on three other occasions and the ureter was dilated to 5 mm., the bulb apparently reaching to the kidney pelvis. The left ureter was normal.

In spite of an apparently well dilated ureter the attacks of renal colic persisted and on May 26, 1925, an operation was performed and the kidney was decapsulated and fixed in high position, on the basis of work by Dr. Cassler<sup>5</sup> on nephralgia (Fig. 8). Convalescence was normal and she experienced complete relief from pain throughout the summer and gained both in weight and strength. However in September she had another attack of pain and was again cystoscoped and a 4.33 mm. bulb was passed to the kidney without resistance, October 12, a 5 mm. bulb likewise passed without resistance. Shortly after this time she returned to America and was under the care of Dr. F. Hinman in San Francisco. He treated her for the strictured ureter but pain continued and in September, 1926, a nephrectomy was done. At operation he found the ureter obstructed near the kidney pelvis. At this point it is extremely difficult to dilate with catheters.

*Case 5.* Miss O. G., single, nullipara, aged 29, was admitted to the hospital on October 8, 1923, with amebic dysentery and symptoms suggestive of renal colic. She was treated on the medical service for amebiasis and was transferred to gynecology for diagnosis of the renal condition. Both ureters were catheterized and pyelograms taken (Fig. 9). The left ureter was extremely difficult to catheterize and only a plain No. 5 F. catheter without wax bulb would pass. Because of the difficulty and the severity of the pain following pyelograms, the catheter was left in the ureter for several hours. When it was withdrawn there was very great resistance even on a plain catheter. Almost immediately following removal of the catheter she began experiencing the most excruciating pain. Morphine would not control the pain. The following morning an attempt was made to insert a catheter into the left ureter intending to leave it in place and thus admit of urinary drainage, but not even a No. 5 F. would pass.

Four days later, the pain not having abated, the ureter was exposed extraperitoneally in the pelvic region and was resected and the free end was anastomosed to the

bladder. The ureter presented a most unusual picture. For a distance of 5 cm. from the bladder it was thick and fibrous and about 8 mm. in diameter. It resembled the ureter so little that it was exposed upward until normal ureter was unmistakably recognized and also traced into the bladder. The ureter above the stricture was thick walled but not dilated. Anastomosis was successful, pain was relieved at once and convalescence was uneventful. She returned to her regular work as a nurse in a mission hospital in the interior of China and was able to carry on her work without discomfort from February, 1924 to January, 1925.

Symptoms recurred and she returned to Peking and attempts were made over a long period of time to locate the opening of the uretero-vesical anastomosis without success. The right ureter which was also narrowed in the broad ligament region was dilated. It was my impression that the anastomosis had completely closed and that the pain was referred from the strictured right ureter. Finally in November, 1925, a trickle of urine was seen coming from the left ureter at the site of transplantation and attempts were made to catheterize it but even filiform bougies would not enter. A second operation was done—the bladder was opened and the ureter which was now dilated was exposed in the pelvic region. Under vision the ureteral orifice was dilated to No. 15 F. with Hegar sounds. The opening was occluded by a very thin but dense overgrowth of bladder mucosa. Relief was again experienced and profiting by our previous experience this opening from the ureter into the bladder was kept dilated without difficulty at intervals of two weeks until the summer of 1926, at which time I returned to America. She was examined at the Mayo Clinic in 1927, and the opening of the left ureter into the bladder was reported to be functioning well.

*Case 6.* Miss F. L., single, school teacher, aged 28, was admitted to hospital June 29, 1925, complaining of insomnia, pain on urination and bladder irritability of many years standing. She also had digestive disturbance, occasional diarrhea and occasional pain in upper abdomen. Had appendectomy and myomectomy in 1922. Abdomen very tender to palpation especially at the point where the ureter crosses the pelvic brim. Right kidney was large and palpable clear to the upper pole. Cystoscopy was done and right ureteral orifice found ulcerated and very inflamed. A plain catheter was inserted and on injection the "old pain" was produced. On the next examination a 4.33 mm. bulb would not pass the ureter. A no. 8 F. catheter was inserted and the kidney held 11 c.c. of solution to sense of fullness with no return. The ureter was again examined and on this occasion a 4.33 mm. bulb was successfully passed, and on withdrawal there was a very firm hang at 8.5 cm. from the urethral orifice. Stricture was in the broad ligament region. At subsequent treatments the size of the bulb was enlarged. The pyelogram (Fig. 10) was taken April 3, 1926. The solution passed freely into the bladder and evidently the stricture was well dilated. However, she continued to have discomfort in the upper abdomen, and backache, and on June 12, 1926, a nephropexy was performed. Unfortunately



Fig. 9. Case 5. Bilateral pyelogram shows no dilatation and no stricture yet this is the patient who required an operation for relief of stricture in left lower ureter.

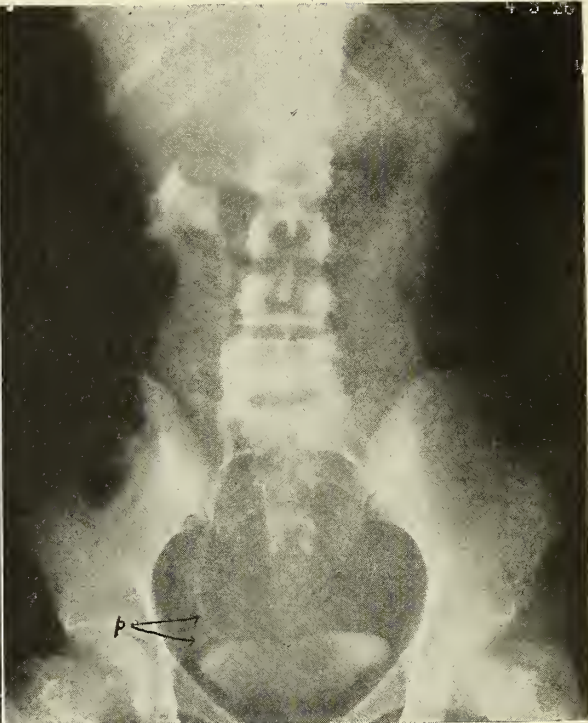


Fig. 10. Case 6. Pyelogram made after a number of treatments of right ureter. Ureter uniformly larger than normal but no obstruction to outflow of fluid. Marked ptosis of kidney. Of interest are the two phleboliths indicated at "p."

a sinus developed in the incision and a second operation was done in December, 1926, after my return to America and silk sutures were removed. Aside from this complication she was in good health at the time of the second operation.

*Case 7.* Mrs. M. C., married, para (3), aged 27, was seen at the office on December 27, 1926, complaining of headache, constant backache, profuse vaginal discharge, and chronic indigestion. She had also irritation in the bladder with increased frequency of urination and extreme urgency. Coughing or sneezing caused uncontrolled contraction of the bladder and small amounts of urine to pass involuntarily. Her trouble began six years ago following the birth of her first child and she has never been well since. Following the second childbirth she was in bed several months with thrombophlebitis. Otherwise her past history is unimportant. Physical examination showed a freely moveable, tender right kidney, tenderness along the course of the right ureter and on the left side also at the pelvis brim portion of the ureter. The perineum was greatly relaxed and the cervix was deeply lacerated and inflamed. Cystoscopy revealed a trigonitis and a pin-point right ureteral orifice through which a plain No. 6 F. catheter passed with difficulty. The urine was blood tinged. Numerous pus cells were present. The kidney capacity was only 6 c.c. to the point of severe pain which she said was in the same location as her backache though more severe. Reaction was very severe. The left ureter was examined three days later and was found to be in the same condition. Bulbed catheters (4 mm.)

were used and with considerable difficulty passed through the ureters and on withdrawal there was considerable resistance in the bladder wall region. She was admitted to the hospital and on January 7 was again cystoscoped and a pyelogram of the right kidney was made. The kidney and ureter held 20 c.c. of solution without return.

On January 8, 1927, a Sturmdorf tracheloplasty, perineal repair and suspension of the right kidney were performed. The nephropexy was done because of the marked digestive disturbance that was thought to be due to traction of the loose kidney on the other abdominal viscera. Convalescence was uneventful. Since operation the digestive disturbance has not recurred, she has continued with dilations of both ureters, having altogether had thirteen treatments of the left and ten of the right ureter. Both ureters were dilated so that a 5 mm. bulb passed readily. The last treatment was on October 10, 1927, and she reports that she has had no further trouble with her back or bladder.

*Case 8.* Mrs. J. C. M., married, para (1), aged 23, was first seen at the office on April 11, 1927, complaining of constant pain in back and soreness in the lower abdomen, frequency of urination with irritation in the bladder of 17 months duration beginning after her first baby was born. She stated that when she sits down the roll of fat on her abdomen causes pressure pain in the lower left side and also that she can not endure tight clothing around the waist line because of this internal soreness. At the time she came to me she had

an acute tonsillitis and so no cystoscopy was done. Instead she was referred to an otolaryngologist for treatment and on April 20, her tonsils were removed. She returned for examination on May 10. She had tenderness to pressure on both sides along the course of the ureters and over the kidneys but neither kidney was palpable. The pelvic organs were normal except for a large circular erosion on the cervix. The right ureter was catheterized with 3.5 mm. bulb on the catheter which passed without great resistance. Injection of 15 c.c. of solution caused her old pain. Urine from right kidney showed 3 to 4 leukocytes per high power field and an occasional red cell. On May 14, left ureter was explored in the same manner. The left kidney and ureter would hold only 5 c.c. of solution because of severe pain.

On May 30 she entered the hospital for x-ray study and for urine cultures. Both ureters were catheterized and cultures taken. A growth of staphylococcus was reported from the left ureter, no growth from right. Pyelograms were taken of both kidneys. The left kidney would hold only 6 c.c. of solution and the right held 20 c.c. though there was some return to the bladder. Both kidneys were in normal position. Both ureters are strictured in the mid-pelvic portion with possibly another narrowed zone near the bladder.

The strictures on the left side have been much more resistant to treatment than on the right, the right ureter has been dilated altogether thirteen times and now readily admits the passage of a 5.33 mm. bulb and there is free return per bladder. Symptoms on the right have also disappeared. The left ureter has had twenty-one dilatations and to date I have been unable to pass a bulb larger than 4.66 mm. and that only on one occasion. A 4.33 mm. bulb will pass but with considerable resistance but the added .33 mm. will not go through. On withdrawal there are two constant points of great resistance, one at 15 cm. and the other at 8 cm. from the urethral meatus. Even with incomplete dilatation the patient declares that her condition is improved and she can now go for longer intervals free from discomfort than formerly and she has more strength. The cervix was cauterized thoroughly and is now in good condition.

Case 9. Mrs. J. A. J., married, para, (2), aged 40, was seen on June 17, 1927, with the complaint that she had constant desire to void, severe bearing down pains in the bladder and extreme tenderness in the lower abdomen more marked on the left which she called "colon trouble" because it was a cramp like progressive pain. These symptoms have been aggravated for two months. She has been in very poor health for years and has "doctored" a great deal. Appendectomy at 22 years, operation for tubal pregnancy at 28 years, goiter operation in 1927, has had also several operations on ears, nose and throat.

Palpation of the abdomen revealed no tenderness over the kidney region nor was either kidney palpable. There was marked tenderness in both lower quadrants near the pelvic brim and over the symphysis pubis. Pelvic organs were normal except the cervix which had also been operated upon, evidently an Emmet trachelo-

plasty which had resulted in complete obliteration of the cervical canal with a small, almost pin sized opening connecting with the uterine cavity in the extreme upper right fornix. Catheterized urine showed very numerous pus cells and an occasional red cell. Cystoscopy was done the next day. The bladder distended well with air but the mucosa was markedly inflamed especially on the trigone. The right ureter was a pin-point opening in a mound of edematous tissue. A No. 8 plain catheter was inserted but was completely obstructed at about 5 cm. outside the bladder. A No. 6 F. catheter met the same obstruction but finally passed to the kidney. The urine from the catheter was full of pus cells, 8-10 per high power field and also numerous red cells were present. The reaction to this catheterization with a plain very small catheter was very severe. Typical attacks of renal colic in the right kidney developed and lasted two days. They were so severe that it seemed possible, in view of the difficulty of catheterizing the ureter that there might be a stone in the lower ureter.

She was taken to the hospital and was examined with x-ray on June 20. No stones were seen. Culture of urine was positive for b. coli. She was put on hexylresorcinol by mouth and dilatation treatments were begun. June 22, the right ureter was dilated with a 3.5 mm. bulb with a firm hang 8 cm. from the urethral orifice. Capacity of kidney and ureter was only 6 c.c. Kidney and ureter were repeatedly instilled with 1-500 silver nitrate. Bladder was instilled with the same solution on conclusion of treatment. July 6, the left ureter was explored with a 3.66 mm. bulb. Instillation of 7 c.c. of the solution, caused the same peristaltic, cramp-like pains in the left side that she had previously called "colon trouble." There was a firm hang at 9 cm. from the urethral opening. Right ureter was also dilated with 3.66 mm. bulb and irrigated.

July 18, both ureters were dilated to 4 mm. with bulbed catheters and instillations carried out as before. General condition much improved and bladder condition practically cleared up. Only very slight inflammation around ureteral orifices was present. The final treatment was given on July 25, both ureters being dilated to 4.33 mm. with bulbs. Both ureters are now dilated sufficiently so that on instillation there was free return on both sides. Urine cultures from both sides were now negative and urine clear. She has been free from symptoms from that date and has reported on two occasions that she is better than for years.

#### DISCUSSION OF CASES

These nine cases are not presented as typical ureteral stricture cases but because they bring out some point in diagnosis or treatment which I wish to emphasize. Nephrectomies were performed in three cases (1, 2, 4), one for pyelonephritis, one for relief of pain that could not be accomplished by dilatations and one possibly unnecessarily but all three in cases of long standing stricture. Suspension of the kidney was done in

two cases (6, 7) to relieve symptoms other than those due to the stricture itself. One ureteral calculus (3) was removed with retrograde dilatation of a stricture and in one case (5) operation was done for relief of the stricture.

All of the cases excepting 7, 8 and 9 were examined by the otolaryngology department and foci of infection in the tonsils and sinuses were ruled out. Two of the three additional cases had negative tonsils and sinuses. Only one case (8) had inflamed tonsils, which were removed before treatment of the stricture was begun. All three of these cases had or had had severe lacerations of the cervix and operations were done on two of these cervixes and one was cauterized. Six of the cases (1, 2, 3, 4, 8, 9) either had positive urinary cultures or gave evidence from history of having had an intrinsic urinary tract infection. Six of the cases (1, 3, 6, 7, 8, 9,) were either cured or greatly improved following dilatation alone. One case (5) was cured after two operations, one a ureteral anastomosis with the bladder and the second a dilatation of the artificial ostium.

#### CONCLUSION

Ureteral stricture in the female is a common condition.

It presents a fairly definite symptom complex with fairly definite physical findings.

It can be positively diagnosed only by the use

of cystoscopy and ureteral exploration with bulbed catheters and with *x*-ray as a useful adjunct.

Aggravated bladder symptoms should indicate trouble in the kidneys or ureters and should lead to their exploration.

Strictures of long standing result in damage to the kidney which may be so extensive as to render nephrectomy necessary.

Consistent and persistent treatment of strictures will result in a great majority of cases in a permanent cure or at least in great improvement in the patient's condition.

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## BILATERAL RENAL LITHIASIS\*

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CALCULUS may be single or multiple, in one or both kidneys, situated in the parenchyma of the organ, in the pelvis, or in both simultaneously. If in the parenchyma, there is very little movement and often less disturbance in the function of the kidney, as illustrated in the case to be reported. On the other hand, in the pelvis, small calculi not adherent to the walls are usually freely movable and, if too large to pass through the ureter, may intermittently occlude the pelvic outlet, causing more symptoms and seriously interfering with the kidney function. That calculi should form simultaneously in both kidneys is a natural inference; yet, according to Eliot,<sup>1</sup> such an occurrence is the marked exception and is perhaps accounted for by the fact that the chemistry of the urine collected by ureteral catheterization from either kidney does not always show the same composition and may vary to such an extent as to actually differ in reaction.

However, Thomas<sup>2</sup> states that bilateral renal lithiasis is not a rare condition. He states that, according to his records, 12 per cent of renal stones occur in both kidneys in adults, with 6 per cent in children. He states that 66 per cent of bilateral stones are multiple and occur in chronically infected kidneys, commonly called "stone formers." He further finds the proportion of occurrence in male and female is 5 to 1 and the average age forty-three years.

According to Eliot, subjective symptoms are of little diagnostic value; nevertheless, they lead to *x*-ray examination. Thomas says that 66 per cent of his cases had no symptoms referable to kidney. This, I believe, is due to the fact that his report dealt with 203 cases in children and infants. Pain is the most constant symptom, subject to frequent variation. Renal calculus without pain occurs less frequently than gallstones without pain. The most typical is lumbar pain, radiating downward and forward along the course of the ilio-inguinal nerve. Pain due to renal calculus is rarely referred to the opposite kidney.

Surgical treatment of renal calculus depends upon the number and location, whether one or both kidneys are involved and the condition of the kidney itself. The best method of approach after delivering the kidney is by an incision through the posterior wall of the pelvis. The location of the stone by *x*-ray, while accurate, is often misleading, as in interpretation of other *x*-ray films. Valuable assistance is gained by bimanual palpation of the kidney in the course of the operation. The method consists of inserting the tip of the little finger through an incision in the posterior wall of the pelvis and the index finger of the same or opposite hand on the external surface of the kidney. Large branching calculi are best approached by an incision in the pelvis, longitudinally parallel to the convex border of the organ. For small stones an incision is made at right angles to the long axis of the kidney. Fracture of the calculus should be avoided to prevent recurrence. After removal of the stone, the incision in the pelvis is best approximated with one or more mattress sutures of catgut. Operation causes little disturbance of kidney function. The urine is not perceptibly diminished in quantity during the first twenty-four hours. Nephrectomy is often done in calculous pyonephritis. When both kidneys are involved, it may be difficult to determine the appropriate treatment. A nephrectomy is not justified unless adequate renal sufficiency remains.

The object of bringing this case before you is to illustrate the importance of careful preoperative diagnosis. To emphasize the dangers of insufficient examination, I will present the diagnostic facts as they occurred in this case.

V. S., a married man, aged 37, had a negative family and venereal history.

*Past history.*—Besides the usual contagious diseases and typhoid fever in childhood he had pneumonia in 1918 and an appendectomy in 1910.

Present complaint began in 1920, with a colicky pain in the lumbar region on the left side, radiating down the medial side of the thigh and into the flanks. An *x*-ray examination at that time (in Cleveland) showed a large stone in the pelvis of the right kidney, for which an operation was suggested. Since then, he has passed several small stones with very little dis-

\*Presented before the Minneapolis Surgical Society, Dec. 1, 1927.

comfort, the disturbances lasting from three to eighteen hours without serious after-effects. The patient has had chronic soreness and heavy drawing sensations in the back and in the region of the bladder. The last attack began suddenly March 22, 1927, with violent pain in the left flank, frequent urination and uncontrollable vomiting. The patient was brought to the office, where two hypodermics of  $\frac{1}{4}$  grain of morphine, one-half

drops escaped from the left ureter, which consisted mainly of pus and a few red blood cells. A normal quantity escaped from the right and this contained a few pus cells. Functional test revealed the dye appearing on the right side in four minutes, although it was not recovered on the left side after forty minutes. Attempts to introduce sodium iodide into the left kidney pelvis were unsuccessful, the fluid passing

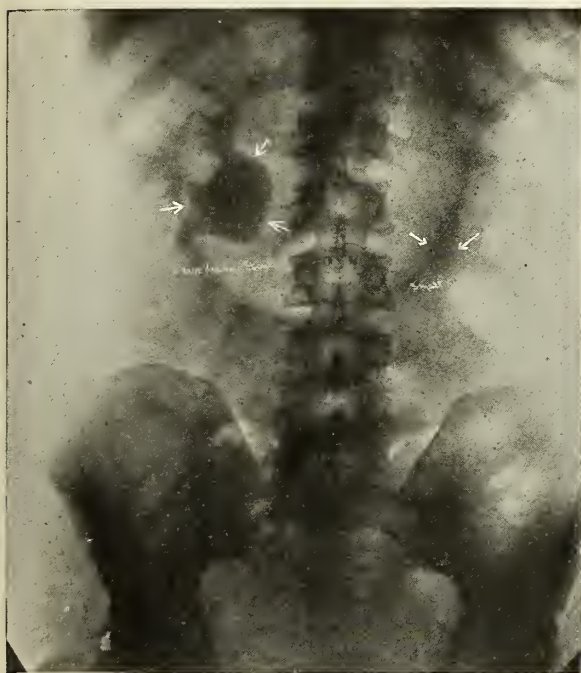


Fig. 1. Large calcified mass, occupying the right kidney pelvis and major calices and small triangular stone in the left ureter opposite the third lumbar vertebra.

Fig. 2. Stones as in Fig. 1, as well as an opaque solution in the bladder which on account of the obstructing stone could not be injected into the pelvis of the left kidney.

hour apart, gave no relief, and he was sent to the hospital. For the next seven days the pain was almost uncontrollable, and the patient had chills and an irregular temperature, ranging from normal to 102. This subsided on the eighth day.

General physical examination revealed a moderately well-nourished, healthy appearing middle-aged male of fair color. The heart and lungs were normal. Except for a general spasticity of the recti muscles the abdominal examination was negative. Murphy percussion was positive on both sides.

X-ray examination of the urinary tract on March 24, 1927, was reported as follows: "Plates of the urinary tract show a large calcified mass filling the right kidney pelvis, the major and some of the minor calices. There is no further evidence of urinary stone. Conclusions: Large urinary stone right kidney" (Fig. 1).

Urinalysis on March 23, 1927, and repeated on March 27, showed a moderate amount of albumin and a large quantity of pus, as well as a considerable number of red blood cells.

Cystoscopic examination by Dr. Owre on March 29, 1927. The ureters were catheterized and only a few

back into the bladder, as shown in the accompanying pyelogram (Fig. 2). The pyelogram showed the catheter in contact with the stone, and x-ray examination on March 29, 1927, five days after the first x-ray, was reported as follows:

"Plates of the urinary tract show a large calcified mass, occupying the right kidney pelvis and major calices. There is also a smooth triangular stone in the left ureter opposite the third lumbar vertebra. An opaque solution was injected into the left ureter but reaches a point about one cm. below the stone in the left ureter.

Conclusions: (1) Large kidney stone right kidney. (2) Large stone left ureter (Fig. 2).

I cite the above detailed examination to emphasize the importance of the cystoscopic examination in checking in x-ray findings. The roentgenologist can be excused for not seeing the stone in the left side in the first radiogram, as you will agree by examining the accompanying picture. The unusual size of the stone in the pelvis of the right kidney distracted the attention from the left side, where the outline of the small triangular stone overrides a peculiar, artificial, crescentic shadow on the film. The removal of the right kidney

might easily be contemplated, following an ordinary inspection of the plates. This kidney, however, proved to be the only one that was functioning.

On April 1, 1927, the triangular stone, the size of an almond, impacted in the outlet of the left renal pelvis was removed by delivering the left kidney through a Mayo incision and the pelvis incised vertically on the posterior side. The incision in the pelvis was closed with a mattress suture of No. 00 chromic catgut not including the lining of the pelvis, and a fatty pad su-

In conclusion, the case serves to emphasize the value of a thorough urological examination, including both cystoscopy and roentgenography before proceeding to surgery.

#### DISCUSSION

DR. THEODORE SWEETSER: There are several points in Dr. Nordland's paper which deserve emphasis:

The symptoms caused by ureteral calculus, especially

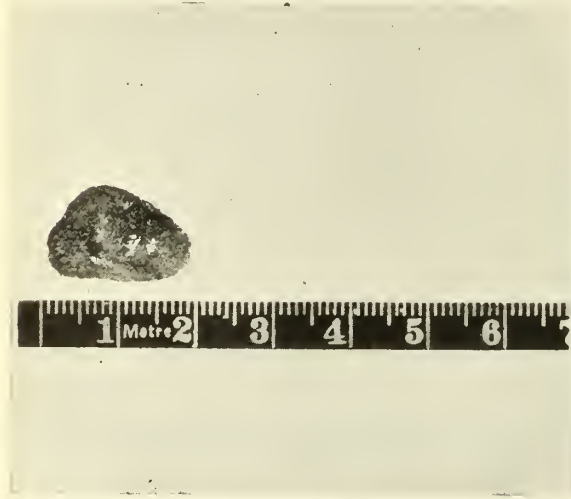


Fig. 3. Small stone removed at first operation, which occluded the left ureter.

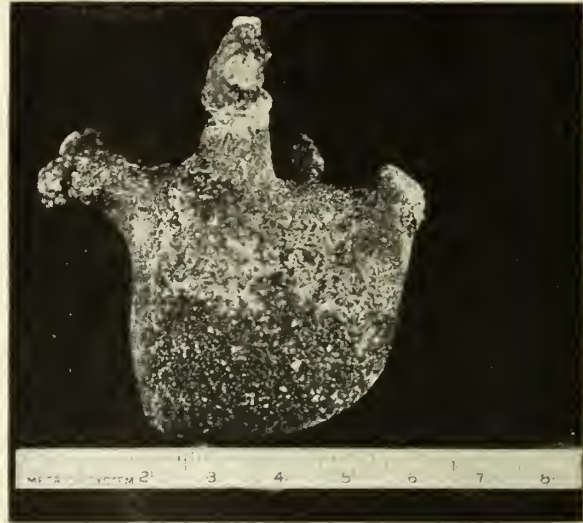


Fig. 4. Large stone removed from the right kidney at second operation.

tured over the line of repair. The patient made an uneventful recovery, leaving the hospital April 10, 1927.

While the patient had no further symptoms, he was anxious to have the larger stone of the right side removed and reappeared at the hospital, one month later, May 10, 1927.

Cystoscopic examination by Dr. Owre at this time showed ureteral catheterization as follows:

Right kidney—occasional epithelial cell, 20 to 25 pus cells and 2 to 3 r.b.c.

Left kidney—rare epithelial cell, 2 to 3 pus cells, 2 to 3 r.b.c.

"Large traces of albumen were found and the reaction was neutral. Catheter passed to each kidney pelvis meets no obstruction. Urine collected. Indigo carmine intravenous shows in 5 minutes from the right and in 8 minutes from the left kidney. Color test shows the right kidney to be a better functioning kidney."

Operation in the right side on May 13, 1927, was performed as on the left side, except incision in the pelvis was horizontal along the convex border of the kidney, two inches in length. The incision in the pelvis was closed with three interrupted mattress sutures of No. 00 chromic catgut and fat implanted over the line of repair.

The patient had an uneventful recovery. Repeated urine examinations since show small amount of pus, but albumin has disappeared. The patient has become very vigorous and states that he feels better than he has for years.

in the right ureter, are often confusing. This man's appendix had been removed some time ago; it may well be that he had appendicitis at the time, but the presence of urinary calculus and the experiences reported in the literature entitle us to wonder. The pain caused by ureteral and renal calculus is often entirely abdominal in location, and in many cases it does not radiate typically. A. B. Cycil, in 1920, reported a series of cases of urinary calculus, in 28 per cent of which the pain was entirely abdominal. In 10 per cent of that same series the urine was entirely normal. A few weeks ago I was asked to do a cystoscopy on a patient who had had repeated attacks of apparent gall-stone colic, so diagnosed by a number of physicians, and who had entered the hospital under that diagnosis. Fortunately the preliminary roentgenogram had put the surgeon on guard. The cystoscopy and urography then demonstrated a conical stone, practically blocking the right ureter. Spasticity of the rectus abdominis muscle was present in Dr. Nordland's patient. It is usually absent in cases of urinary stone unless there is an accompanying ureteritis or pyelitis, and is even then an unusual finding. It has often led surgeons to the erroneous diagnosis of intra-abdominal lesion, when the other symptoms of urinary stone were not typical.

In considering the treatment of this patient, we agree that the operative removal of the stone blocking the

outlet of the left renal pelvis was the first indication and an imperative one. To have attacked the right kidney first would have been decidedly hazardous. After the immediate danger had been removed by extraction of the stone from the outlet of the left renal pelvis, the removal of the large stone from the right renal pelvis became a matter of judgment. The age of the patient, the good functional test, and the patient's wish were potent arguments in favor of operation. Dr. Nordland is to be congratulated on having been able to remove the stone by pyelotomy, as the outlook for that kidney is much more favorable than if the stone had been removed by nephrotomy.

DR. S. R. MAXEINER: I just wonder if Doctor Mann remembers a case which he had at the Government Hospital. I did the cystoscopic examination on the patient. We drained the kidney and went in later and removed the kidney, which was constantly forming stones. He would pass approximately a stone a day.

Up to the time of the removal of his kidney he had no trouble with the other side. After we took out the kidney he formed just as many stones in the remaining kidney. I had him as a patient at Asbury Hospital, passing stones from the other kidney. He would come in with a small pill box in which he had collected a number of stones in the course of two weeks.

About that time a German physician came out with the idea of giving salvarsan. I gave him repeated doses of salvarsan and with no benefit. The last time I saw this patient he got me out at 3:00 o'clock in the morning, as he was passing a stone and was having a great deal of pain. These stones seemed to be phosphatic. You could take them in your fingers and squeeze them with violence and they would crush up into a little fine white powder. The patient had pus in the urine all the time.

DR. ARTHUR T. MANN: When I was in London I spent some time in the Hospital for Stone in the Bladder. Later we saw large collections at Liverpool. It seemed to be their impression that there must be some infective cause behind the stones. There was one man who had made a great study of this and he felt that the first thing that came down was some calcium. Many of the stones were calcium stones and when not calcium stones they had demonstrated calcium in the nucleus of the stones in many instances. It was a very interesting thing to me because it was entirely new. Their feeling was that there must be something behind it in the nature of an infection and that the first stones contained some calcium at least in the nucleus.

DR. IVAR SIVERTSEN: It has been my privilege to see two of these cases with double kidney stone. One case had about the same type as Dr. Nordland's case. The left kidney had two stones. I operated one kidney at a time—operating the one with the best function first and a second operation was done later. The second stone was in the substance of the kidney proper and it was necessary to split the kidney. The stone was imbedded very strongly in the parenchyma of the kidney substance and the patient had considerable hemorrhage,

and on the night of operation had a tremendous hemorrhage. We transfused the patient and he made a good recovery. That was about eight years ago. In the last week he died from carcinoma of the bladder. He did develop a smaller stone in the left kidney again which was not operated. It gave him very little trouble. There is a question in my mind as to whether the stone had anything to do with the carcinoma of the bladder.

The other case was one of a double kidney stone. When the first operation was performed, the surgeon who operated the right kidney pulled so hard in pulling the kidney into place, that he tore it from the blood vessel and pedicle, with the result that there was a tremendous hemorrhage. This was checked and the patient made a good recovery. The second operation was done later on the other kidney. The kidney was split and the stone removed. The patient made a good recovery although he had an anuria for several days following the operation. Since this time he has been in perfect health.

DR. KENNETH BULKLEY: In connection with the case just reported by Dr. Nordland it might be of interest to cite a case in my own family illustrating common errors of diagnosis in cases of kidney stone. I have no notes on this case and consequently must report it solely from memory. This patient was a woman who developed symptoms supposedly due to a chronically diseased appendix. No x-rays were taken and her appendix was removed without relief from symptoms. Her urinary symptoms were few and following appendectomy she fell into the hands of an individual whose hobby was duodenal ulcers. As I remember it, she was, without much investigation, then subjected to an anterior gastroenterostomy with a Murphy Button. Unfortunately this Murphy Button was wrongly placed and fell into the stomach where it bobbed about for a number of years. Her abdomen was again opened and the button removed. Later this patient developed symptoms of a vicious circle. Her abdomen was again opened and an entero-enterostomy was done. The symptoms on her right side, which consisted mostly of pain, continued. She was more carefully investigated and a calculus was found on the right side with a right pyonephrosis. Right kidney was then removed. Later it was discovered that she had a stone in her left ureter. This stone was small and was finally successfully removed by cystoscopic methods. This patient today is alive and I believe in reasonably good health although about 75 years of age. She has had no recurrence of her stone to date. I question very much whether this patient ever had an appendicitis or a duodenal ulcer. She is a rather unusual example of bilateral nephrolithiasis subjected to a deal of unnecessary surgery through incorrect diagnosis and remaining well after the removal of one kidney and a stone from the opposite ureter.

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## A STUDY OF ACQUIRED SYPHILIS IN FAMILY GROUPS\*

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THE literature contains numerous reports on syphilis in husband and wife, and many of them deal with the frequency with which neurologic complications are associated. The majority of these reports emphasize the influence of the so-called neurotropic strain of the *Spirocheta pallida*. Noguchi, Nichols and Hough, and Levaditi and Marie, from a study of syphilis in laboratory animals, accumulated evidence which led them to believe that this neurotropic strain of the *Spirocheta pallida* had specific affinity for the tissue of the nervous system. This strain was distinguished from that which produced lesions in the skin particularly and is known as the dermatotropic strain. Variations in the size of the organisms and incubation characteristics in animals were among the differential points in neurotropic and dermatotropic strains of *Spirocheta pallida*. It is not difficult to gather from the literature clinical reports that call attention to series of cases in which infection occurred from a common source and in which the same type of syphilis developed. These examples have supported the concept of specificity of the *Spirocheta pallida*. Moore and Keidel, also Moore and Kemp, studied 111 husbands and wives and found that in 57 per cent of patients affected with parenchymatous neurosyphilis (tabes dorsalis and paralysis) both husband and wife had neurosyphilis. On the other hand, in only twenty-eight cases of the cerebrospinal form of neurosyphilis were the husband and wife infected.

In a study undertaken at the Mayo Clinic of a group of 100 patients with neurosyphilis, it was found that in 22 per cent the husband and wife showed evidence of neurosyphilis. This estimate was based not only on dermatosyphilologic examination but also on neurologic examination, and included only those cases in which the spinal fluid of both the husband and the wife had been examined at least once. It was also noted in that survey that 44 per cent of the husbands had neurosyphilis in one form or another while the wives had latent syphilis and, also, that only 14

per cent of the wives manifested serologic or neurologic evidence of neurosyphilis while the husbands had the latent form of the disease. No particular attention was paid to the type of neurosyphilis presented, since the first criteria for involvement of the nervous system were believed to be the serologic observations on the spinal fluid. The clinical signs of neurosyphilis were recorded, but were not included in the estimation except in a small group of cases of "burned out" or arrested tabes in which the spinal fluid was normal, although clinical signs were present. In the review of cases of husbands and wives the evidence did not support the theory of the neurotropism of the *Spirocheta pallida*.

It was then decided to investigate clinically a group of relatives to note the influence of familial characteristics, and for this purpose the case records of brothers, sisters, and parents and children who had acquired syphilis from different sources were studied. The criteria used in the selection of this group of cases consisted of clinical and serologic evidence of syphilis, absence of even presumptive signs of congenital syphilis, history of chancre followed by secondary signs of syphilis, and absence of paternal or maternal history of the disease preceding the birth of children. In other words, an endeavor was made to estimate the part played by familial and hereditary influences in affecting the clinical course of syphilis in members of the same family who had acquired the infection from different sources.

Thirteen families were included in the grouping. There were four groups of sisters, two of brothers, two of brother and sister, two of mother and son, two of mother and daughter, one group of father and son, and one group of mother, son and daughter.

*Neurosyphilis\* of more than one member in seven families.*—It was found that in seven (53.8 per cent) of the families more than one member had neurosyphilis. The families comprised two families of two sisters each, one family of two brothers, one family of mother

\*From the Section on Dermatology and Syphilology, Mayo Clinic, Rochester, Minnesota. Submitted for publication January 12, 1928.

\*Both symptomatic and asymptomatic neurosyphilis.

and son, one family of father and son, one family of mother and daughter, and one family of mother, daughter and son.

*Neurosyphilis of neither member in two families.*—It was found that in two of the families neither member manifested serologic or clinical signs of neurosyphilis. The families comprised one family of two sisters, and one family of mother and daughter.

*Neurosyphilis of one member only in four families.*—It was found that in four families one member had neurosyphilis and the other had not. The families comprised one family of two sisters, one family of two brothers, and two families of brother and sister each.

#### REPORT OF CASES (FOUR FAMILIES)

*First family.*—Two sisters, aged twenty and twenty-four, came to the Mayo Clinic because of enlarged thyroid glands. They were the third and fourth children in a family of eight. The mother and father and six other children were alive. During the course of the examination, the blood of both patients was found to react positively to Wassermann tests. Suggestion of syphilis could not be found in the history of the parents. Examination of the two oldest children, a brother and sister, did not reveal stigmata of congenital syphilis, although the sister who had been married three years reacted positively to the Wassermann test. Her husband gave a history of having had syphilis two years before marriage. She refused permission for examination of the spinal fluid.

#### FIRST FAMILY

##### *Sister, aged twenty*

History of chancre of lip in 1924, which was diagnosed at the time and treated by pills (mercury?) by mouth.

On admission to clinic Kolmer modification of Wassermann test on blood 44; examination of cerebrospinal fluid, July 18, 1924: Wassermann test 44,444 (strongly positive); Nonne test positive; 137 lymphocytes and 18 polymorphonuclears; colloidal benzoin curve 000 000 333 200 000.

Neurologic examination negative except that right pupil was larger than the left, its reaction was normal; general examination: adenomatous goiter without hyperthyroidism.

October 21, 1926, tests on blood and spinal fluid entirely negative; patient asymptomatic.

*Second family.*—Two brothers, aged thirty-two and thirty had meningeal neurosyphilis. The parents were alive and well at seventy-four and seventy-two. One other brother was alive and well and without clinical or serologic evidence of syphilis. No signs or stigmata of congenital syphilis were demonstrated in either.

*Third family.*—A brother and sister, aged fifty and forty, had acquired syphilis. The brother had associated aortitis and the sister active neurosyphilis. There were seven brothers and sisters, six of whom were alive. The oldest brother had died at the age of fifty-one in a hospital for the insane, with a diagnosis of general paresis. The mother and father had died at seventy-five and seventy-eight years respectively.

*Fourth family.*—A mother and a son and daughter were examined at the Mayo Clinic at different times over a period of four years. The mother was fifty years of age and had borne three children, one of whom had died following appendectomy. She had not had miscarriages. Her husband gave a history of extramarital infection in 1910. The son was twenty-six years of age and had had epilepsy for one year. The daughter, who was thirty-three years of age, was examined two years after her brother's admission. She complained of persistent headaches. Neither the son nor the daughter showed stigmata of congenital syphilis. The daughter's husband gave a history of having had syphilis shortly before marriage, and the Wassermann test of his blood was positive at this time.

##### *Sister, aged twenty-four*

History of syphilis denied although she admitted frequent exposures; residual signs of gonorrhea.

On admission to clinic Kolmer modification of Wassermann test on blood 44; examination of cerebrospinal fluid, July 20, 1924: Wassermann test 44,444 (strongly positive); Nonne test positive; 117 lymphocytes and 10 polymorphonuclears; colloidal benzoin curve 002 200 333 310 000.

Neurologic examination essentially negative; general examination: migraine, type of person usually seen with nervous exhaustion, chronic mitral endocarditis with good compensation.

October 26, 1927, Wassermann test on blood negative; Wassermann test on spinal fluid still weakly positive but patient essentially asymptomatic.

## SECOND FAMILY

*Brother, aged thirty-two*

History of penile chancre followed by secondary lesions in 1910; marked alopecia noted at the time of appearance of secondary lesions; treatment consisted of medication by mouth. Wife negative for evidence of syphilis; two children well, with no evidence of syphilis.

On admission to clinic Wassermann test on blood strongly positive. May 5, 1923, examination of cerebrospinal fluid: Wassermann test 4441—, Nonne test positive; 70 lymphocytes; colloidal benzoin curve 000 000 033 200 000.

Neurologic examination objectively negative except that patellar reflexes were absent; general examination essentially negative.

Tests on spinal fluid and blood became negative following only moderate treatment, and remained so.

*Brother, aged thirty*

History of penile chancre in 1920 with questionable secondary lesions; no treatment. Married twice; first wife died; second wife negative for evidence of syphilis.

On admission to clinic Wassermann test on blood strongly positive. May 5, 1923, examination of cerebrospinal fluid: Wassermann test 1—; Nonne test positive; 56 lymphocytes; colloidal benzoin curve 000 000 333 000 000.

Neurologic examination objectively negative except that pupils were irregular, left greater than right; general examination: chronic appendicitis and chronic prostatitis.

July 3, 1927, tests on blood and spinal fluid negative after four years of fairly intensive treatment; patient asymptomatic.

## THIRD FAMILY

*Brother, aged fifty*

Syphilis acquired in 1894, with definite history of cutaneous and mucous membrane lesions; practically no treatment at the time.

On admission to clinic February 27, 1924, Wassermann test 44 (strongly positive); examination of cerebrospinal fluid: Wassermann test negative; Nonne test negative; 1 cell; colloidal benzoin curve 000 000 022 000 000.

Neurologic examination negative; general examination; syphilitic aortitis; aneurysm of the descending aorta.

Satisfactory symptomatic response; invalid but self-supporting.

*Sister, aged forty*

Premarital infection; history of syphilis in 1900 with mucous patches, condyloma, alopecia and marked cutaneous eruption; treatment consisted of mercury pills and one injection of salvarsan in 1913.

On admission to clinic, November 12, 1924, Wassermann test on blood negative; examination of cerebrospinal fluid: Wassermann test 4,441—(strongly positive); Nonne test positive; 34 cells; colloidal benzoin curve 012 202 333 321 000.

Neurologic examination: syphilis of central nervous system; diagnosis based on serologic data; general examination essentially negative.

Tests on spinal fluid negative November 12, 1926; patient still nervous and high strung; further observation necessary to rule out parenchymatous neurosyphilis.

## FOURTH FAMILY

*Mother, aged fifty*

No history of primary syphilis (husband acquired extramarital infection in 1910).

On admission to clinic Wassermann test on blood strongly positive; examination of cerebrospinal fluid: Wassermann test 44,441 (strongly positive); Nonne test positive; 133 lymphocytes; 7 polymorphonuclears; colloidal benzoin curve 022 200 333 330 000.

Neurologic examination negative; diagnosis of syphilis of central nervous system based on serologic data.

Patient a symptomatic for some time; serologic tests reversed to negative after three years of intensive treatment.

*Son, aged twenty-six*

History of chancre in 1915 followed by secondary skin lesions; on admission to the army in 1917 the blood Wassermann test was reported negative.

On admission to clinic Wassermann test on blood strongly positive; examination of cerebrospinal fluid: Wassermann test negative; Nonne test negative; 1 cell; colloidal benzoin curve 000 000 333 000 000.

Syphilis of central nervous system; epilepsy: grand and petit mal; the neurologists thought the syphilis was associated rather than causative but recommended a therapeutic test.

Therapeutic test positive; epilepsy controlled.

*Daughter, aged thirty-three*

No history of chancre or secondary lesion (husband acquired syphilis shortly before marriage).

On admission to clinic Wassermann test on blood strongly positive; examination of cerebrospinal fluid: Wassermann test 421—; Nonne test positive; 14 cells; colloidal benzoin curve 022 000 332 000 000.

Neurologic examination negative; diagnosis of syphilis of the central nervous system based on serologic data.

Insufficient time and treatment to warrant any deductions.

Moore and Keidel reported instances of neurosyphilis in members of the same family who had acquired syphilis from different sources. This report included a review of the literature up to 1923, and supported the theory that family characteristics are vital in determining the end-result of syphilis. The review of the members of thirteen families presented here shows that in four families (37.6 per cent) only one member had neurosyphilis, while in the remainder both members in each family had either neurosyphilis or latent syphilis. A clinical investigation of this type presents evidence in support of the contention that the soil is a more potent factor in determining the outcome of the syphilis than is the type or strain of the *Spirocheta pallida*. It is agreed that trauma, disease, virulence of the organism and the type of treatment are important factors influencing, in one way or another, the resistance of the host.

In the interpretation of the results of treatment a more striking parallelism was noted in the cases of neurosyphilis. In the seven families thus affected favorable therapeutic response was noted in all members in five family groups, while in the remaining two family groups unfavorable progress was noted in all members. One of us (O'Leary) has called attention to this point previously.

Presumptive evidence from clinical and thera-

peutic observations supports the contention that the resistance of the host is a more prominent factor in determining the course of acquired syphilis than the type or strain of the *Spirocheta pallida*. The advocates of the theory of specificity of the *Spirocheta pallida* have not as yet established their concept in the case of the human being.

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# CASE REPORTS

## LYMPHOSARCOMA

REPORT OF CASE

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Minneapolis

A man, aged 29, was admitted to Fairview Hospital January 12, 1928, complaining of sour stomach, belching of gas and abdominal distress.

*Past History.*—He had had a tonsillectomy in 1924, appendectomy in 1927 (said he became worse after this operation), night sweats thirteen years ago with slight temperature in the afternoon, but no cough, sputum, nor hemophysis, and influenza in 1918.

*Present Illness.*—For the past fifteen years he says that he has had sour stomach after taking of liquids. He has belched considerably and has had eructations of sour material. There also has been a burning sensation over the abdomen, marked after the taking of fried food. This latter symptom became more marked one year ago, at which time nausea and vomiting also occurred. Soda and the taking of food seemed to relieve the pain. At about the same time he developed pain in the right lower quadrant of the abdomen which radiated transversely across the abdomen. Appendectomy was done in March, 1927, which partially relieved the pain. In September, 1927, he noted bloating of the abdomen and on September 28 he vomited about a quart of blood and tarry stools were present.

*Examination.*—Posterior cervical adenopathy is present. Heart and lungs are normal. Abdomen is distended; liver and spleen not felt. There is a hard mass corresponding to the position of the stomach and duodenum, fairly freely movable, very hard and irregular and filling most of the abdominal cavity. No fluid can be determined.

Laboratory findings: Urine shows no albumin and no sugar; few hyaline casts, occasional blood cell. R.B.C. 3,430,000. Hgb. 65%, white cells 12,000. Bleeding time 1 minute 30 seconds.

X-rays: Stomach well visualized, of normal size and position. A filling defect was found at the pyloric end extending over a wide area. There was 15 per cent residue in the sixth hour plate. Diagnosis: obstructive lesion of stomach.

*Operation.*—Under ethylene anesthesia an exploratory operation was done. A tremendous tumor involving the stomach, transverse colon and pancreas was found. There was much chyle in the abdominal cav-

ity. A piece of the tumor from the omentum was removed for diagnosis and the pathologist made a diagnosis of lymphosarcoma. The diagnosis before operation was abdominal malignancy. Following operation, the patient became weaker and marked diarrhea developed. Temperature fluctuated widely, reaching 102 on several occasions, but which after January 26 did not go above 100. He became delirious, developed air hunger and died January 31.

*Autopsy.*—Fibro-purulent exudate is present over all the peritoneal surfaces. Stomach is bound down posteriorly. The transverse colon and all surrounding structures are matted together in one firm mass. Posterior surface of the right lower lobe of the right lung feels nodular and pus can be expressed from the bronchioles on cut section. The stomach is markedly dilated and enlarged. The greater curvature extends about 5 cm. below the xiphoid process. Its lower half is composed of a solid mass of tissue which follows closely its normal outline.

The anterior wall of the stomach in its lower portion is thickened. The thickening is irregular and seems to end abruptly at the junction of the upper and middle thirds. Posteriorly the stomach is bound down and directly continuous with the firm tissue mass beneath. This mass extends down behind the stomach about the head of the pancreas, closely adherent to the pylorus and the first part of the duodenum. It descends down as a continuous mass of tissue about the aorta, including in it the superior and inferior mesenteric arteries. Section shows a homogeneous, white, fairly firm tissue. A huge ulcer is present in the mucosa of the stomach occupying its lower portion. At the lesser curvature it extends upwards to within 5 cm. of the esophagus. The lower edge is well defined, involving the entire circumference and ending abruptly 1 to 3 cm. above the pyloric ring. The edge is very irregular and consists of a raised border of gastric mucosa, slightly thickened and curled under. The ulcer is 17 cm. in its greatest longitudinal measurement and 12 cm. transversely.

*Microscopic examination.*—Various sections from the tumor show it to be composed mainly of round cells, varying slightly in size and shape; nuclei are fairly vesicular; cytoplasm is scant; these cells are in a fine reticular network; large areas of necrosis are found in the nodes in the mesentery and in the retroperitoneal nodes; in places the endothelial cells show marked proliferation and present rather dense cords of cells.

*Diagnosis.*—Lymphosarcoma of the stomach.

## ESOPHAGEAL STRICTURE OF UNUSUAL ORIGIN\*

REPORT OF CASE

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In 10 per cent of cases of benign stricture of the esophagus the cause is unknown. The onset of dysphagia is usually insidious and if the patient is more than forty the question of malignancy must be considered seriously. In many instances time alone will determine the diagnosis. In none of the patients observed in the clinic suffering from cicatricial stricture of the esophagus of unknown origin has the onset been as dramatic as in the case presented here.

REPORT OF CASE

A man aged twenty-one, a furniture packer, was perfectly well until September 1, 1926. On this date while he was lifting a couch he experienced severe epigastric pain. Twenty minutes later he was ad-

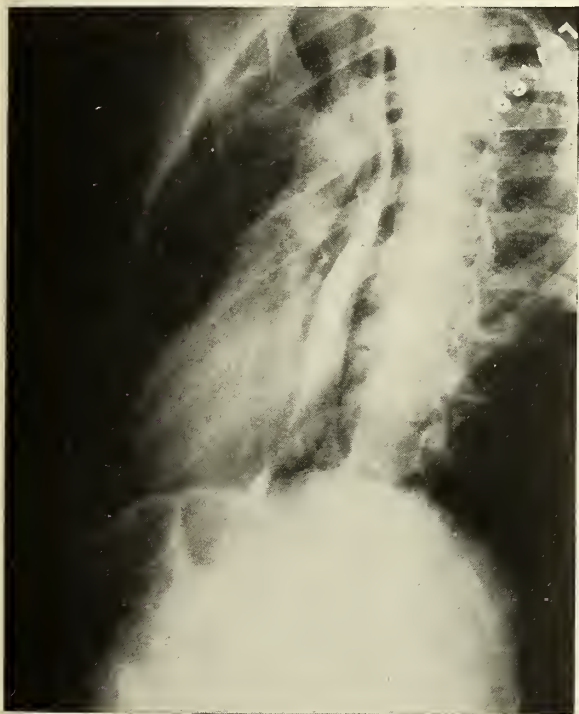


Fig. 1. Benign stricture of the lower portion of the esophagus.

mitted to hospital; the pain increased in severity and in a short time he became irrational. There was high fever, hiccup, and vomiting of blood. A diagnosis was made of rupture of the stomach or intestine and a hopeless prognosis was given. In spite of the fact that fever persisted, solid food was given at the end of one week. It was then found that he was unable to swallow, obstruction being noticed in the lower part of the

esophagus. Dysphagia was progressive and at the end of seven weeks, after four days of complete esophageal closure, gastrostomy was performed. The patient's general health improved considerably and he was able to swallow liquids.

On the patient's arrival at the Mayo Clinic, January 12, his general examination was essentially negative. Roentgen-ray examination revealed obstruction to the barium meal in the lower portion of the esophagus (Fig. 1). On esophagoscopic examination January 17, a benign stricture was located in the lower part of the

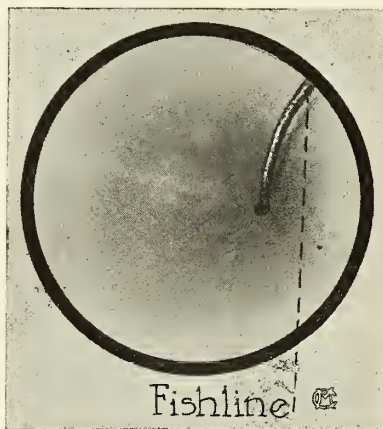


Fig. 2. Esophagoscopic view of stricture.

esophagus (Fig. 2). He swallowed a thread which was brought out through the gastrostomy opening, and January 19 the stricture was dilated to No. 29 French. Following dilatation he has been able to eat any kind of food without difficulty and has gained materially in weight. Further dilatations will, of course, be necessary to maintain the lumen of the esophagus.

It seems likely that there was spontaneous rupture of the lower part of the esophagus with healing and reduction in the lumen of the tube. Such accidents have been reported but have usually occurred following severe vomiting. In the cases observed in the clinic in which stenosis of the esophagus developed after vomiting of pregnancy, healing has resulted in the formation of scar tissue and stricture.

## SPONTANEOUS SUBARACHNOID HEMORRHAGE

REPORT OF CASE

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*Saint Paul*

The case is that of an unmarried white male 32 years old. The family history is negative. The past history is negative except for the fact that the patient always had been very nervously inclined and used alcohol in moderation. He smoked very moderately. Venereal disease was denied.

The present illness began on Dec. 26, 1927, when the patient while at work as a postal clerk had an attack

\*From the Division of Medicine, Mayo Clinic, Rochester, Minnesota. Submitted for publication March 22, 1928.

characterized by sudden shooting pain in the occipital region accompanied by intense vertigo. There was no disturbance in consciousness, but because of the severe pain the patient went home and to bed. He remained there for two days and was not seen by a physician. At the end of that time he returned to work feeling perfectly well except for some occipital pain which disappeared within a week.

He then remained entirely well until the night of Jan. 27, 1928. At this time while at work lifting some heavy mail sacks he felt a sudden, sharp, shooting pain in the back of his head. He was nauseated and very dizzy and felt extremely ill all over. He sat down on a pile of mail sacks and then lost consciousness completely. Fellow workers state that there were no convulsions or abnormal twitchings. In about 20 minutes he gradually regained consciousness and then vomited several times. He still complained of severe occipital pain and talked as if he were confused. Because of his condition he was sent to the Ancker Hospital and admitted to my service there.

Upon admission the patient was disoriented for time and place, very irritable, curt, and resentful. His answers were evasive and often incorrect. He was restless and complained of intense generalized headache. The physical examination was negative. The neurological examination by the intern, Doctor Arthur Johnson, revealed a rigid neck and a bilaterally positive Kernig. The cranial nerves and fundi were normal. There was distinct weakness of the left arm and leg with diminished abdominal reflexes on the left. There was no Babinski or ankle clonus. His temperature was 98 degrees axillary; blood pressure, systolic 122, diastolic 72; hemoglobin 88 per cent; leucocytes 15,500 with 82 per cent p.m.n.s. An attempt at lumbar puncture failed because of lack of coöperation by the patient.

I saw him twenty-four hours after his admission to the hospital. At that time the neurological findings were essentially the same as those noted by the intern the day before except that the left hemiplegic signs and mental symptoms had subsided and a positive Babinski had appeared on the left. The patient still was complaining of severe headache and had a rigid neck and bilateral Kernig. His temperature was 103. A lumbar puncture yielded a reddish fluid under increased pressure containing free hemoglobin, 165 cells, a 3 plus globulin, a negative Wassermann, and a colloidal gold curve of 0012421000. A diagnosis of subarachnoid hemorrhage was made and the patient put on appropriate treatment, which included daily spinal drainages. For the first week it was necessary to employ a gas anesthetic during the spinal drainages.

The patient gradually improved after the drainages were instituted and on the fifth day his temperature was normal but the neck still stiff. The Kernig was less marked. The amount of hemoglobin and number of cells in the spinal fluid became less and less, and after the fourteenth drainage the fluid was normal except for a slight yellowish tinge and 25 cells. At this time the patient was quite comfortable, the neck was freely movable, so the drainages were performed only every other day. On February 20 the patient felt en-

tirely well, the spinal fluid was normal in all respects and on February 24 the patient was discharged as cured.

The history of a previous attack occurring in a young adult, the bloody fluid containing free hemoglobin, the signs of meningeal irritation, and the sudden onset lead one to a diagnosis of subarachnoid hemorrhage.

This definite clinical syndrome probably occurs more often than is supposed. It frequently is diagnosed and treated as meningitis. While the etiology may vary in different cases, the clinical picture and course are fairly uniform and the condition should be treated as a distinct clinical entity. In the cases with no demonstrable arteriosclerotic, syphilitic, aneurysmal, or infectious etiology (a true spontaneous subarachnoid hemorrhage) the prognosis is usually good.  
538 Lowry Medical Arts Building.

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## ACUTE FEBRILE ANEMIA

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### REPORT OF CASE

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*Red Wing, Minnesota*

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The following case is submitted both because of its striking similarity to other cases recently reported and because of the unique features characterizing it. At the time this patient was under observation it was believed to be one of pernicious anemia, with sudden onset, quick recovery and no recurrences. The fact that we had been dealing with a new clinical entity did not become apparent until the appearance of the recent articles by Moschcowitz and Brill. The data while not as complete as one might wish is nevertheless sufficient I believe to establish it as a companion case to those already reported.

### CASE REPORT

Mr. C. S., an unmarried farmer, aged 60, entered the hospital April 10, 1923, with a chief complaint of moderately severe nasal hemorrhage of two days duration. He had always enjoyed excellent health and had always been a hard worker. Family history was negative. His habits were good.

Examination revealed a well developed and well nourished male patient in an irrational state of mind. Pyorrhea and moderate caries of the teeth were present. The tongue showed some atrophy of the papillae. Considerable brownish pigmentation was seen on the body but none on the buccal mucous membranes. The skin and sclerae exhibited moderate jaundice.

Blood examination on admission was: Hemoglobin 51 per cent; erythrocytes 2,120,000; color index 1.3; leukocytes 117,400. Smear shows a polymorphonuclear leukocytosis, no myelocytes.

The patient rapidly became worse, and his condition seemed hopeless. The case was considered to be one of pernicious anemia and a transfusion was decided on. While a search was conducted for a suitable donor, an intragluteal injection of 25 c.c. of whole blood from a brother was administered. That evening the

patient had a large, bloody emesis, followed by persistent singultus and loss of sphincter control. Opium was necessary to control the active delirium and motor phenomena.

The following day the patient seemed to be improved. Another intragluteal transfusion of whole blood was given. Blood examination showed: Hemoglobin 40 per cent; red cells 1,816,000; color index 1.4; leukocytes 16,800. Smear showed pronounced megalocytosis and microcytosis, with moderate poikilocytosis. Uniform deep staining of the red cells was present. A few polychromatophilic cells were seen. Two normoblasts were present.

During the first five days in hospital the temperature ranged from 99.5 to 103.6 degrees, with morning remissions and afternoon rises. The pulse varied with the fever, 80 to 130.

The third day the patient appeared to be out of immediate danger. Urine was normal except for a trace of albumin. Blood examination on this day showed: Hemoglobin 36 per cent; red cells 1,336,000; color index 1.4; leukocytes 4700. In spite of the lower blood readings, the condition of the patient had materially bettered. A third small transfusion identical with those preceding was given. Following the fifth day the temperature became normal and all symptoms were disappearing except a weakness, which at no time was severe. The patient remained in hospital twenty-one days.

April 25, 1923, the hemoglobin was 46 per cent; erythrocytes 2,230,000; color index 1.1. After leaving

the hospital hemoglobin readings taken at intervals of two weeks were 47, 45, 49, 62, 83 per cent. In November, 1923, the hemoglobin was 90 per cent; erythrocytes 5,184,000; color index 0.9.

Hemoglobin estimates taken at six week intervals since have always ranged between 87 and 93 per cent. Red cell counts have always been over 5,000,000. The patient was able to work within two months after leaving the hospital and has enjoyed uniform excellent health since. At present after a lapse of five years he is normal in every respect except for a blood pressure of 160 (systolic), and a slight systolic murmur which is not transmitted. Considerable vitiligo is now present which has appeared since his illness.

*Summary:* A case of severe anemia, primary in type, with abrupt onset, marked fever, jaundice, a short but severe illness, and rapid recovery following three small whole blood transfusions, intragluteally administered. This and persistent good health for a period of five years are sufficient evidence, we believe, to class this case as one of acute febrile anemia.

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#### CLAUDEN NOT ACCEPTABLE FOR N. N. R.

The Council on Pharmacy and Chemistry reports that Clauden, manufactured by Luitpold-Werk, Munich, Germany (East Brook, Inc., New York, distributor) is claimed to be a harmless, efficient and superior hemostatic for local, oral, hypodermic and intravenous administration. On the basis of the evidence presented by the manufacturer and distributor, the Council found Clauden unacceptable for New and Non-official Remedies because its potency and keeping qualities are not controlled; because the labels and advertising contain no caution of the possibility of anaphylactic reaction from foreign protein; and because the claims advanced for it are unwarranted. (*Jour. A. M. A.*, April 7, 1928, p. 1116.)

#### EPILEPSON

"Epilepsion," described in the advertising as an "amazing discovery" which "stops epileptic attacks at once," has been put on the market by the Epilepsion Company, Inc., of Brooklyn, New York. Later the name of the concern seems to have been changed to the Remedy Products, Inc., of New York City. An examination of Epilepsion in the A. M. A. Chemical Laboratory showed that it was essentially Phenobarbital (luminal). (*Jour. A. M. A.*, April 7, 1928, p. 1141.)

#### ORLANDO EDGAR MILLER

Recently a Canadian paper reported that the question of deporting "Dr." Orlando Edgar Miller was being considered by the Canadian authorities. For the past few years Miller's line has been "applied psychology" and motion picture company promoting. In the early nineties, Miller was running a "rupture cure" concern. Subsequently he is reported to have exploited a "medicated sand treatment" as a "sure cure for dyspepsia." Then he organized the "St. Luke's Society," to exploit a "cure" for drug addiction. His next venture was a combination "university" and "sanitarium." Then he founded the "International Institute for the Treatment of Tuberculosis" and later transferred his activities to Europe. In 1920 Miller was back in America as the "Affirmative Apostle of Intense Individuality." He went to California in 1921 and organized a motion picture concern known as the "Rellimeo Film Syndicate." In 1925 he was reported under investigation by the grand jury of Boston as a promoter of the "Temple of Psychology." Buffalo papers then reported his arrest on the charge of grand larceny. In January, 1927, two warrants were issued against Miller, one charging embezzlement and the one charging violation of the state corporate securities law of California. (*Jour. A. M. A.*, April 14, 1928, p. 1235.

## President's Letter

THE Public Relations Committee met in St. Paul, April 26. Every County Society was invited to send a representative from its local committee and there was, I understand, a hundred per cent attendance. The most interesting aspect of this meeting was the earnestness, enthusiasm and apparent willingness of these men to work. All phases of the relationship of the medical association to the public were discussed by men from all parts of the State. The keynote of the meeting seemed to be organization and coöperation in an attempt to harmonize the points of view of the public and the medical profession. To do this, the profession must first crystallize its own ideas.

Mr. J. G. Crownhart, Executive Secretary of the Wisconsin State Medical Association, told us what they are doing in Wisconsin. He showed us yards of newspaper clippings from the Press of Wisconsin, all put out by the News Service of the Wisconsin State Medical Association without mentioning the names of doctors. The Public Relations Committee has arranged for this service for Minnesota at a very small cost.

Dr. Jones, who organized the Public Health League in the State of Washington, and who is now working for the Gorgas Memorial Fund, told us how they cleaned house out there. Interest in medical legislation reached such a low ebb in the State of Washington that a law was passed giving the right to any system of healing, which could show fifty practitioners of its system in the State, to establish their own Board of Examiners. Dr. Jones consented to talk to our House of Delegates on June 11. Everyone should hear him, if possible.

We had a few minutes of relaxation in the afternoon when Dr. Meyerding captured Will Rogers, who was stopping at the Saint Paul Hotel for the day. He gave us his latest "dope" on doctors and operations.

A few days after this meeting I received the following letter from Dr. Franklin Martin, President of the Gorgas Memorial:

"Mr. Jones has returned from the meeting at St. Paul and is enthusiastic over the way your Association is studying and meeting the various problems there. He reports that you have a very serious and earnest group of men—broad-gauged in their views, and willing at all times to accept new policies where they will mean further advancement of Scientific Medicine.

"I am glad to have this report, and I want to congratulate you on the progress you have made in Minnesota and the possibilities of future advance."

*C. B. Wright*

# EDITORIAL

## MINNESOTA MEDICINE

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### The American Medical Association and State Medical Association Meetings

Every physician in the state who can possibly absent himself from the responsibilities of his practice for the week of June 11 will be in Minneapolis for the much heralded A. M. A. meeting. Rarely does the national convention come to us; as a rule we must travel miles to attend. Enough said.

The clinics to be conducted Monday and Tuesday of convention week by well known visitors have not been emphasized as they might. They will be an outstanding feature of the meeting.

The scientific exhibit promises to be larger than ever and is always instructive. The commercial exhibit will be as large if not larger than that of any previous convention.

Advantage is being taken of the Minneapolis gathering to have a Minnesota Medical Alumni general reunion. Each alumnus can count on meeting former classmates at the large banquet scheduled for Wednesday night. The alumni of other medical schools will have similar meetings.

In this number of the journal appear various references to the convention. Our readers are referred to the Minneapolis number of the A. M. A. Journal (May 12) for details. The information booth will answer all queries during convention week. Members are urged to present their A. M. A. Fellowship cards when registering to avoid delay.

The question has been raised as to who are entitled to register and take part in the work of the various sections. Only Fellows and invited guests are eligible. Members in good standing in county and state medical associations are automatically members of the A. M. A., but are not listed as Fellows unless they have applied for Fellowship and paid the additional \$5.00, which entitles them to subscription to the A. M. A. Journal. Some A. M. A. members have subscribed to the Journal but have failed to apply for Fellowship and are therefore not so classed. Members of the State Medical Association who do not hold Fellowship cards will facilitate registering in Minneapolis by writing the A. M. A. for the prescribed form so they may obtain the Fellowship card in advance of the meeting.

The national meeting should not minimize the work to be done by the State House of Delegates. Committee reports are being sent to county delegates by the secretary, Dr. E. A. Meyerding, and these reports should be studied by the delegates as individuals and in groups so that intelligent action can be taken by the House as a whole.

### Progress in Endocrinology

To those interested in the glands of internal secretion, their functions and their disorders, events during the last few years have been most encouraging. There are signs that endocrinology, as a science, is coming of age. The isolation of the parathyroid hormone, the discovery of the estrum-producing effect of the liquor folliculi, and the preparation of a growth-accelerating substance from the anterior lobe of the hypophysis, are especially significant of progress in this field. The recent work of Kamm and his collaborators, who have separated posterior pituitary extracts into oxytocic and pressor fractions, may make possible more exact determinations of the normal functions of the pituitary body.

Rogoff and Stewart, after years of patient work on the suprarenal gland, have prepared a substance from the cortical portion of the gland which prolongs the lives of dogs on whom supra-renalectomy has been performed, and which is also giving encouraging results in the treatment of Addison's disease.

The growing interest of scientists in fundamental endocrinology is attested by the large number of valuable contributions presented at the recent meeting of the Federation of Biological Scientists. Contributions such as these represent the results that may be obtained when exact and accurately controlled methods of experimental medicine are brought to bear on the problems of the internal secretions.

It is unfortunate that laboratory studies of this nature are not more generally known and appreciated, since they would do much to improve the present status of endocrinology as it actually exists throughout the country. Physicians are flooded with the circulars of pharmaceutical concerns extolling the virtues of glandular products of all sorts and descriptions; the literature is replete with articles on the glands of internal secretion, which, to say the least, are inaccurate and misleading. Much of the material in the circulars referred to, as well as certain of the reports in the literature, are of about the same scientific value as patent medicine testimonials. As a result, the indiscriminate use of endocrine preparations in a wide variety of diseases goes on in spite of the warnings and protests of physicians and other scientists who have been trained in

more critical habits of deduction. It is well to recall that scientific progress is best made along the lines of exact experimentation, and that a few cases accurately observed and carefully controlled are worth hundreds of cases observed in haphazard and perfunctory manner. Physicians everywhere would do well to apply the methods of the laboratory to their treatment of endocrine disease, rather than to put their faith on the use of pseudoscientific glandular products which, as Boerhave said of the glandular spermatopœa of his time, "are doubtful and perhaps vain."

A. M. S.

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### Concerning Expert (?) Medical Testimony

The criticism is continually advanced by some of our most able men that we have no right to expect a favorable public opinion toward the medical profession until we first clean house ourselves.

For example: The matter of expert medical testimony has long been a blot on the good name of the profession of medicine. Disciplinary measures on the part of the local county society—at least in Ramsey County—are not often resorted to. So-called expert testimony is privately discussed—the offender may be branded as a crook and the fact that such testimony is offered is deplored and the matter is then dropped.

The scheme advanced at one time by the Hennepin County Society of having a non-partisan medical board bring in a medical verdict seems a fair procedure to everybody except the lawyers. Judging from the comment of lawyers on this scheme it is not likely to prove successful, since both sides of the case must agree to the procedure in advance.

Anyone doubting the necessity of organized action along this line has but to read Dr. Sweeney's recent article in MINNESOTA MEDICINE.

What are we going to do about it? Two measures suggest themselves.

*First.*—For the committee on University Relations to recommend to the Board of Regents systematic instruction to the medical students in each year of their course on medical ethics—honor and integrity—with special reference to so-called expert testimony.

*Second.*—For the State Medical Association to establish a Judiciary Committee. In the event of

apparent flagrant violation of common honesty in expert medical testimony, the complaining physician shall file a written complaint with this committee. The committee shall have authority, if they deem it advisable, to obtain a transcript of the proceedings and, after due study and hearings in which both parties shall appear, shall render its verdict. Expulsion from the State Association shall carry with it expulsion from the local society.

As a corollary to the above procedure physicians qualifying as experts might properly be quizzed as to their medical society membership.

F. J. S.

### The Woman Physician in Minnesota

The first woman physician of this country appeared in 1849 and since that time so many of her sisters have followed her example that there are now about 7,000 women practising medicine in the United States. Among these are many names which are well respected throughout the medical world for great achievements. Furthermore, although it is generally thought that women do not excel in surgery, they have been practising that specialty since 1865,<sup>1</sup> and The American College of Surgeons, which stands for surgical ability, has fifty women fellows, four of whom are members of the governing board of that organization.

In this country also, is a National Medical Women's Association which created, promoted, and manned the American Women's Hospitals bringing comfort and healing to countless suffering people in foreign countries. The great accomplishments of this are well told by its director Dr. Esther Pohl Lovejoy in her recent book.<sup>2</sup> The Woman's Medical College of Philadelphia accepts only women students and women are also admitted to sixty-three University Medical Schools in this country. From facts such as these it would be inferred that women had become well established in the medical world. The lay press, however, seems to consider this a debatable question and recently has devoted considerable space and attention to the difficulties surrounding the woman physician. The reading

of these articles stimulates consideration of the status of the woman physician here.

Minnesota has long had the reputation of accepting and appreciating her medical women. In this state 124 women have registered this year. Of these, 96 gave addresses in Minnesota, 49, half of them, in Minneapolis, while 28 are practising outside the state, but holding licenses here. In addition to these there are at least six women, with medical degrees, in the Twin Cities who are the wives of prominent physicians, but do not themselves practice medicine. At least two more are practising in partnership with their husbands. In the medical school of the University of Minnesota there are twelve women physicians on the faculty and among the student body there are thirty-four girls who support a chapter of Alpha Epsilon Iota, one of the two national medical sororities. At the Mayo Clinic there are six women physicians on the permanent staff and four of these comprise their own clinical diagnostic section. Also at the Mayo Clinic there are eight women fellows taking post graduate work in medicine. The Minneapolis City Laboratory and the Division of Preventable Diseases of the State Board of Health are each under the direction of a woman physician as was also the Infant Welfare Work until a few months ago. Medical women are among the personnel of the Minnesota School for Feeble Minded at Fairbault, State Hospitals for the Insane at Fergus Falls, Rochester, and Willmar, the Glen Lake Sanatorium, Gillette and Shriner Hospitals for Crippled Children, The Nicollet Clinic of Minneapolis, the Miller Clinic of St. Paul, and the editorial staff of MINNESOTA MEDICINE, the official organ of the State Medical Association. Furthermore, Dr. Mary Ghostley has recently been honored by being elected president of the Upper Mississippi Valley Medical Society. Therefore, it seems that in this state at least, women are well represented in the medical profession.

The success of women physicians will always be a matter less of fact than opinion; and the opinion will differ widely according to the toler-

1. Viator, Agnes: Women in surgery. The Zontain, April, 1928.

2. Lovejoy, Esther Pohl: Certain samaritans. McMillan Co.

3. Hartt, Rollin Linde: The woman physician. Has she arrived after her long and adventurous struggle? Century, July, 1927.

4. Do you too shun the woman physician? Independent Woman, December, 1927.

5. Boyden, Ben: What a girl faces who chooses a medical career. McClures, October, 1927.

ance of the individual, the breadth of his view point, the width of his acquaintance and his knowledge of conditions and accomplishments throughout the country. However, even those who would deny discrimination against women physicians, must admit that it does exist in internships, and that because of it many of our girl graduates must travel far from home in order to get the hospital experience required for their medical degree. This condition has been somewhat improved during recent years by the opening of the doors of the Minneapolis General Hospital to women and it is hoped that all other hospitals will do likewise and thus give, to the younger women, the recognition and advantages that their older sisters enjoy in the State of Minnesota.

MARGARET WARWICK, M.D.

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### Radiology, A Specialty

There appears in this number of the journal, simultaneously with its publication in *Radiology*, the Report of the Committee on Radiological Frauds and Improper Practices of the Radiological Society of North America.

The aim of the resolution is to call attention to the fact that roentgenology is a medical specialty and must be maintained as such and not be relegated to commercial laboratories. The same medical ethics, therefore, apply to  $x$ -ray specialists in regard to split fees, whether these be in the form of commissions or stock dividends. The line is sometimes a bit difficult to draw. A group of physicians, for instance, finance an  $x$ -ray laboratory and hire an  $x$ -ray specialist as supervisor in order to obtain first class services, and incidentally make or lose money on the investment.

The whole point of the resolution, however, is that in the interest of the best roentgenological service supervision should be in the hands of a medically trained man and should not be turned over to commercial laboratories, manned by technicians, which charge medical fees for inferior services. This does not mean that clinic or group arrangements with salaried roentgenologists need be in any way unethical.

A careful perusal of the resolution mentioned and its preamble makes the point clear.

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## OBITUARY

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### Dr. Louis Dunn\*

Louis Dunn was born in Kentucky, March 9, 1866, and obtained his education in the schools of that state preliminary to entering the Ohio Medical School from which he was graduated in 1887. In 1903 he took a course of postgraduate instruction under Wm. Osler.

Dr. Dunn commenced the practice of medicine in Corinth, Kentucky at the age of 21, later moving to New Paris, Ohio, and then to Minneapolis, where he lived for 25 years. He taught pathology at the Hamline University Medical School during his early years in Minneapolis. His interests were always along surgical lines, and he invented and placed on the market an outfit for the administration of local anesthesia, which bears his name.

Dr. Dunn was on the staff of Asbury Hospital and a member of the Hennepin County Medical Association. He has written a number of important papers on medical and surgical subjects and was in the midst of writing a sentence near the conclusion of a report on "Trauma of the Posterior Thoracic Nerve," when death occurred. This paper will be published posthumously. The major portion of his unusually excellent medical library will be presented to Asbury Hospital by his widow, who shared the doctor's interest in medical progress.

Although the diseased had undergone a serious illness two years ago he had apparently regained his former health, and was able to carry on his professional and literary activities with pleasure and enthusiasm.

His death occurred suddenly on April 21. He is survived by his widow, and by two sons, Marshall Dunn of New York and Dr. Halbert Dunn of Baltimore.

The funeral services were conducted with dignity and simplicity in keeping with the doctor's previously expressed wishes. Members of the Hennepin County Medical Association officiated as pallbearers, and one of them, Dr. Geo. D. Haggard, delivered an appropriate biographical sketch and appreciation of the deceased.

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### Dr. Charles Wesley Bishop\*

Charles Wesley Bishop was born in Montreal, Canada, March 8, 1874, of Canadian parents. After his high school course in Montreal he entered McGill University from which he graduated in 1895.

He served his internship at Asbury Hospital in Minneapolis and after postgraduate work at the Manhattan Eye, Ear, Nose and Throat Hospital, he began the practice of his specialty in Minneapolis.

He was a member of the St. Barnabas and the General Hospital Staffs and of the Hennepin County Medical Association.

He belonged to the Masonic Lodge and to the Hennepin Avenue Methodist Church.

His death occurred on April 30, and he is survived by one brother in Canada, one in California, a sister in Philadelphia, and his wife of Minneapolis.

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\*Read before the Hennepin County Medical Society as a report of the Necrology Committee, May 7, 1928.

# THE COMMITTEE ON PUBLIC HEALTH EDUCATION

## Minnesota State Medical Association

The following are some lay opinions expressed at the Conference on Public Relations held April 26, 1928, under the auspices of the State Committee on Public Health Education and attended by representatives of the majority of the county societies. The Committee holds no brief for these opinions, but presents them as representing the attitude of the public.

ROBERT O. JONES, formerly secretary of the  
Washington State Public Health League:

"Out of the turmoil that existed in the State of Washington up to 1920, when osteopaths and chiropractors held reins, arose the Public Health League of Washington. It was dominated by the medical profession who secured the coöperation of the dentists and pharmacists; this combination of professional and scientific men introduced and carried their program through the legislature with startling results—an example of what can be done when group prejudices are laid aside for a common cause.

"The League passed the Basic Science Bill. It was suggested to them by a similar bill in Minnesota and was rewritten to meet the demands of Washington.

"There are two requirements that must be met if the invasion of quackery is to be overcome. These are organization and funds; in the state of Washington the state dues are thirty-one dollars, twenty-five dollars goes to the Public Health League and six dollars is for state dues.

"Washington furnishes an example that speaks eloquently for itself in regard to organization. Local difficulties and disputes were dropped in the interest of the cause; unity was secured in groups which had never before been unified and the combined efforts of all the groups made victory a certainty."

HOWARD KAHN, editor, the Saint Paul Daily News:

"The medical profession is the most difficult one to secure any coöperation from; by being unwilling to lend their names for any kind of publicity they have actually driven the public into the hands of the quacks and drugstore cures.

"Publicity is a potent weapon. Fakes and cults have realized this and used this knowledge to the utmost. In order to combat these undesirable forces, they will have to be met on their own ground with the same means, but with different technique.

"Another sin of the profession is its use of medical terms when addressing the public. They create an atmosphere of mystery which breeds nothing but suspicion.

"It is extremely difficult to suggest a remedy for these conditions, since it must come from the profession itself and not from the outside. But from the point of view of the press the following steps could be taken:

"First, the popularization of medicine, that is the use of general articles pertaining to health with special emphasis on precaution. Second, the abolition of Latin terminology. Third, an attitude of frankness and confidence with the press, without which it would be useless to attempt a joint program. The articles should contain the name of a well-known physician either as author or critic. How else can the people know it is authentic and correct?

"It would also be well to have short notices of the meetings of the medical association appear in the paper. These simply serve as a reminder that the local group of physicians is active and are planning continually for the welfare of the community.

"People know surprisingly little about ordinary rules of health. Tell them simply, authoritatively, and frequently."

LUDWIG I. ROE, editor, the Montevideo News:

"This question is a matter of the adjustment of individuals rather than of the profession. If the physician and the newspaper man can work together, then the problem simmers down to a consideration of the requirements of the local press service.

"We must stress, in the smaller cities, the local features of the story, if nothing more than the signature or approval of physicians be given. General articles coming from a removed source are going to be read with suspicion; articles coming from the pen of the town doctor will have a good psychological effect. They awaken a kind of civic pride, a sense of intimacy. The lesson will sink in—the reaction is, 'Yes, I know him, what does he say?'

"A similar interest can be provoked by announcements of local medical association meetings and comments on the general discussion. They make the people aware of the presence of the association. Incidentally it may strengthen the bonds within the association itself.

"People become a little tired and bored if they are continually told what to do and what not to do. Here is an excellent opportunity for the press to step in and play the game. It can stress the physical attributes of the community, make mention of improvements in the parks, building of new highways, bathing beaches, golf courses, et cetera. All the attractive features of the town which indirectly have to do with community welfare should be talked about. There can be no objections to this type of propaganda on the grounds of interference with other programs; it is strictly ethical and beneficial."

## MISCELLANEOUS

### MEDICAL MALPRACTICE SUITS\*

CZAR JOHNSON, M.D., F.A.C.S.  
Lincoln, Nebraska

(Second Paper)

Every malpractice suit is potentially new medical jurisprudence. The more cases that occur the greater the probability of some new question arising and of a pronouncement of a new law, in the form of a judicial opinion, which may affect the entire medical profession.

The *x*-ray has become universally accepted as a reliable means of diagnosing fractures and determining the position of fragments in the treatment. The use of the *x*-ray has therefore become a requirement. Courts generally hold that if an *x*-ray were available, whether in the possession of the physician involved or not, and because of failure to use this instrument a disability or other unnecessary hardship resulted, this failure of the physician to use an available *x*-ray is negligence.

If failure to use an available *x*-ray is negligence, why does it not also follow that failure to use the microscope under similar circumstances is negligence?

Telephone conversations and sidewalk advice and diagnosis are poor practice and are dangerous, from a liability standpoint.

Medical advice and instructions are component parts of the practice of medicine. Advice that is at variance with the customary teaching and practice in a community, or failure to give advice or instructions in the treatment of a patient, is undoubtedly negligence.

Failure to give timely advice will be made an issue, sooner or later, in some malpractice suit, and a court ruling will make new law.

The Workmen's Compensation Law is an example of what may occur by judicial decisions. In some states this law has been broadened by this method until, for all practical purposes, it has become workmen's health insurance.

The trend of the times has been to trust to insurance for every known contingency.

Liability insurance does not protect the individual physician or the medical society from unfavorable medical law. Insurance compensates for some of the loss sustained and helps defray the costs required to safeguard the profession properly in the courts. I am of the opinion that the most important function of medical defense committees is to prevent lawsuits and, when one is inevitable, to supervise organized medical and legal defense to the end that no case be a source of undesirable medical jurisprudence.

#### NEGLECTANCE—FACT AND OPINION

Malpractice suits are predicated upon alleged negligence. Negligence, in law, is doing something which a

reasonably prudent person would not do under the circumstances, or omitting to do something which a reasonably prudent person would do under the circumstances.

The definition is plain and easy to remember and it seems to me every physician who has been graduated from a medical college should be able to be governed by it.

I define a malpractice disability as follows: A disability or condition for which a practitioner is answerable is one in which a proximate causative relationship exists between the negligence of the physician and the condition produced, without which a disturbance of function or change in the character, form or type of tissue would not have occurred as a natural and continuous sequence, unbroken by any controlling intervening cause, and which is recognizable and measurable by reasonable physical and laboratory means.

The question is, has something been done which ought not to have been done, or has something been omitted which ought not to have been omitted, which is the proximate cause of the disaster? What was done or not done is a question of fact. What *ought* to have been done or not done is a matter of opinion. I want to emphasize the value of facts in the form of *written records* which show what was done and what was advised. The plaintiff will provide sufficient data about what was *not* done or not advised.

The conditions which furnish the majority of malpractice actions are obstetrics, fractures, surgical operations and *x*-ray burns. In each locality some general and accepted rules in the treatment of these classes of cases should be formulated as a guide in practice and as a legal protection to the profession. Authority for surgical procedures is often neglected. Many surgeons remove organs of controversial value without the consent of the patient. A third party (except in the case of minors), whether husband, wife or parent, unless delegated by the patient, has no legal authority to give the surgeon permission to remove any tissue. A patient can not by any legal means absolve the surgeon from negligence, before negligence has occurred.

What would be the reaction in the average man if he went to the operating room for an appendectomy and, when he regained consciousness, he was presented a small, atrophied appendix and two prized ovoid spheres which normally were ensconced near the appendix? Do you think the scientific record that at some time these organs harbored Neisser bacteria would compensate for their loss? And yet we would become greatly agitated were some embryo, incompetent or unscrupulous surgeon sued for malpractice for doing this same relative operation on a woman.

#### SECRET INFORMATION

In practically every case, the petition and the outcome of a malpractice suit depend upon volunteered medical opinion. The assistance is invariably secret. Since time immemorial it has been the unwritten law of the profession that one physician shall not voluntarily testify against another in a malpractice suit. Of the two offenses, volunteering testimony and secret as-

\*This is the second in a series of three articles, the third and last of which will appear in the July issue.

sistance, the latter is the more reprehensible; yet no organized effort has been made to prevent it.

In all the cases I have been connected with, assistance has been given the plaintiff, either knowingly, unknowingly or unwittingly. In one case information and testimony supplied to an attorney for the purpose of securing compensation under the Workmen's Compensation Law was used to file a malpractice suit against a physician who had previously treated the claimant. This opens up another avenue of danger to the medical profession. If this legal practice becomes general, physicians will do well to be very circumspect when mentioning any history involving the treatment rendered by another physician, when making reports of examinations of individuals who are sent to them to determine the degree of disability, otherwise they may be subpoenaed as witnesses for the plaintiff and find themselves in a very difficult situation.

The physician must observe a summons to appear in court. It is the duty of every witness in court to answer truthfully questions of *fact*. The physician who obeys a summons and testifies to facts only should not be condemned nor ostracized for obeying the law, no matter to what extent his testimony may damage the physician involved.

It was Lord Coke who, centuries ago, told King James I that the King ought not be under any man, but under God and the law. So the medical profession need be subservient to no man, but it must be under God and under the law.

But—there is a vast difference between compulsory appearance in court and voluntary effort to appear. And when in court there is a vast difference between testimony concerning fact and testimony concerning opinion. The physician can not avoid testifying to a fact but he can avoid volunteering to do so, and there is no law that can compel him to form an opinion. He may be compelled to disclose what he saw, what he found upon his examination, what he said and what he did and why he did it. These are facts and not opinions.

The weight of decisions sustains the rule that, where an expert witness is summoned, he need not give his opinion without compensation proportionate to the value of the opinion. How could a witness be compelled to engage in a process of reasoning if he did not want to do so?

It does not follow that because a physician is a surgeon or specialist he is an expert medical witness. Wharton on Evidence, Section 434, says: "The distinction between witnesses is this: the non-expert witness testifies to conclusions which may be verified by the adjudication tribunal; the expert to conclusions which cannot be so verified. The non-expert gives the results of a process of reasoning familiar to everyday life; the expert gives the results of a process of reasoning which can be determined only by special scientists." To put this in simple language, the ordinary witness narrates facts from which conclusions are to be drawn; the expert assumes certain facts to exist and, from this assumption, arrives at a conclusion

through a process of reasoning which is, as a matter of fact, an opinion.

#### REPORT OF THE COMMITTEE ON RADIOLOGICAL FRAUDS AND IMPROPER PRACTICES<sup>1</sup>

Some of the remarks made by counselors from various parts of the country seem to indicate that this specialty is threatened by dangers which are more or less peculiar to radiology. It seems that in different parts of the country fee-splitting, masquerading under various disguises, is becoming rather prevalent. If one were to attempt to find the source of these various tendencies and to classify them, he would give first place to the organizations, corporations, or companies selling stock to physicians and surgeons and encouraging these men to refer their cases to *x-ray* laboratories operated and owned by such corporations or companies, in the hope of receiving dividends upon their stock; and, of course, the more cases referred, the larger the dividends. The plan constitutes, stripped of its business terminology, nothing more nor less than an offer of a financial inducement to physicians to refer their case to certain *x-ray* laboratories. Then we have another type of organization which is rather innocent on its face but which offers discounts to members of the organization. That is to say, if the member refers his cases to the laboratory in which he is financially interested, he may have charges for *x-ray* services made to himself, and then he may take a discount of 20 or 25 per cent or more and collect the full fee from the patient. As a matter of fact, there is no restriction whatever to the fees this man may charge; he may obtain his *x-ray* services on a small-fee basis, and then take his discount and charge his patient a large fee for the same service. This creates a rather dangerous situation. Some of these laboratories which operate as stock companies are operating without a roentgenologist in charge, the members themselves claiming they are quite competent to make their own interpretations, their own fluoroscopic observations, and to prescribe treatment. Some of them employ a physician as a figurehead, who is supposed to pass upon cases coming to the clinic, but he actually does not. The diagnosis is made by the technician and the physician's name is signed to the report.

Now, in order to bring this matter before the Society and try to get something concrete done we have prepared a set of resolutions upon which we ask your approval. The question will arise, of course, in all of your minds, as to what good this may accomplish. It seems to your Committee that, if it does nothing more, it will place us on record with a certain definition of commercial *x-ray* laboratories and unethical *x-ray* laboratories; it will define clearly what we regard as ethical practice and as unethical practice. With that backing, we can go before our own local medical societies to obtain their support in cleaning up this situa-

<sup>1</sup>Read at the Thirteenth Annual Meeting of the Radiological Society of North America, at New Orleans, Nov. 28 to Dec. 2, 1927.

tion in various localities throughout the United States. Here are the resolutions which we have to present:

WHEREAS: Certain practices are becoming prevalent in various parts of the United States, which threaten the welfare of radiology, affecting the practice of this branch of medical science in a peculiar, deleterious, and harmful manner, and

WHEREAS: It is an important function of any medical organization to protect its specialty from the harmful effects of improper, unethical, or dishonest practices,

BE IT RESOLVED: By the Radiological Society of North America, in Executive Session at its Thirteenth Annual Meeting, that: (1) Radiological diagnosis is a consulting specialty of medicine, the chief function of which is to aid practitioners of other specialties and of general medicine in the diagnosis and treatment of disease; (2) that it is improper and unethical for any radiologist or any organization practising radiology to offer discounts or commissions, or other financial inducements, to attract patients either directly or through reference by other physicians; (3) that it is unethical for any radiologist or organization practising radiology to make charges to referring physicians for services rendered, but that all such charges must be made against the patient for whom such services are rendered; (4) that a commercial x-ray laboratory is defined as one which advertises to make radiographic or fluoroscopic examinations for physicians and surgeons for the avowed or apparent primary purpose of financial gain; (5) that it is improper and unethical for any radiologist to become affiliated with a commercial x-ray laboratory; (6) that a stock company or corporation with physicians and surgeons as stockholders, offering dividends as an inducement to refer cases to a laboratory owned and operated by such company or corporation, is unethical, and that such dividends be regarded in the same light as commissions or discounts. A group of physicians may properly own and operate an x-ray department or laboratory, providing the earnings therefrom are employed for the advancement of the science of radiology or other branches of medicine or the maintenance and improvement of service to patients, but not as an inducement to stockholders to refer cases in the hope of receiving greater dividends.

RESOLVED: (7) That an x-ray laboratory is to be considered unethical if therefrom emanate diagnostic reports based upon the radiologic observations of technicians who do not possess a medical degree or license to practise medicine.

The mere signature of a physician to such reports is to be regarded as an evasion of this rule unless such signatory has actually made the observations and drawn the conclusions upon which such reports are based.

BE IT FURTHER RESOLVED: (1) That no radiologist engaging in unethical practice according to the above definition shall be eligible to membership in this Society, and that no technician affiliated with an unethical or commercial laboratory shall be eligible to

registration; (2) that a copy of these resolutions be forwarded to each state medical society with a request that they be published in the official Journal; (3) that a committee be appointed to obtain the official approval of these resolutions by the American College of Radiology, the American College of Surgeons, and the American College of Physicians.

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#### STATE BOARD OF MEDICAL EXAMINERS

In March one Mrs. Pauline Schultz, listed as a chiropractor in the Saint Paul telephone directory, with offices in the Hamm building, was charged with having performed an illegal operation on a young married woman residing in Saint Paul. Evidence was obtained by the medical board that the defendant agreed to perform the illegal operation for a consideration of \$100.00, \$50.00 of which was paid on March 12, and treatments rendered March 12, 13, and 14. As a result hospital care was required by the patient. Complaint was later filed, the defendant arrested, released on \$5,000 bail, and trial instituted April 23. The defense introduced was an alibi. It developed that the patient had undergone a previous similar operation and the jury therefore refused to return a verdict of guilty.

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### REPORTS AND ANNOUNCEMENTS OF SOCIETIES

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#### AMERICAN PSYCHIATRIC ASSOCIATION

At the eighty-fourth annual meeting of the American Psychiatric Association to be held at the Hotel Radisson, Minneapolis, June 4, 5, 6, 7, and 8, the addresses of welcome will be given by Dr. W. J. Mayo of Rochester, George E. Leach, Mayor of the City of Minneapolis, and Dr. C. Eugene Riggs of Saint Paul.

The sessions will begin at 10:00 A. M. and 2:00 P. M. daily, and will be open to those professionally interested. A more detailed account of the meeting will be found in the May, 1928, issue of MINNESOTA MEDICINE.

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#### AMERICAN ASSOCIATION FOR THE STUDY OF GOITER

The meeting of the American Association for the Study of Goiter will be held in Denver June 18, 19 and 20 of this year, under the direction of the Denver County Medical Society. Doctor Bretnier of Vienna and Doctor Albert Kocher of Switzerland will be among the distinguished guests. The meeting will be attended by representatives of all of the big clinics in the United States and Canada doing goiter work. It will be an excellent opportunity for anyone who wishes to see operative clinics and to hear diagnostic clinics. This is the fifth year the Society has been in existence. Previous meetings have been held in Bloomington, Louisville and Philadelphia.

## AMERICAN MEDICAL ASSOCIATION

The annual meeting of the American Medical Association will be held in Minneapolis, June 11 to 15 inclusive. Those attending are urged to register as early in the week as possible, at the registration booth in the new Auditorium.

The A. M. A. House of Delegates will meet Monday in the ball room of the Nicollet Hotel with the speaker, Dr. Frederick C. Warnshuis, of Grand Rapids, Michigan, in the chair.

Monday evening, June 11, the Minnesota State Medical Association will be hosts at a dinner in honor of the past presidents, delegates and foreign guests of the A. M. A. at 6:30 o'clock at the Nicollet Hotel. Dr. W. J. Mayo of Rochester will be toastmaster. Governor Theodore Christianson of Minnesota, Dr. Jabez N. Jackson, president of the American Medical Association, Dr. W. S. Thayer, president-elect of the American Medical Association, Dr. Frank Billings of Chicago and Dr. William D. Haggard of Nashville, Tennessee will be on the program. State delegates will receive their invitations when they register. Invitations will be mailed to others of the Association who will attend.

The first meeting of the convention will be held Tuesday evening, June 12, at the Auditorium, at which time the President, Dr. William Sydney Thayer, of Baltimore, will be inaugurated.

Wednesday night, June 13, the medical alumni of the University of Minnesota will hold their much heralded reunion banquet. Over 600 alumni have already signified their intention to be present and the various classes will be grouped at dinner. Following the banquet, which is to be held at six o'clock at the Nicollet Hotel, an entertainment will be provided at the same location for the alumni and A. M. A. visitors. Further information regarding golf Wednesday afternoon for the returning alumni will be obtainable at the registration desk.

The President's reception will take place Thursday evening in the Marigold ballroom, which is peculiarly adapted for the reception and dancing which is to follow.

The various sections of the convention will meet in several auditoriums in close proximity to the Auditorium headquarters, beginning Wednesday. For the information of those concerned the meeting places are herewith listed:

## Large room in Auditorium:

Section on Practice of Medicine

Section on Diseases of Children

## Stage of Auditorium:

Section on Preventive and Industrial Medicine and Public Health

Section on Gastro-Enterology and Proctology.

Committee Room on the third floor of the Auditorium:

Section on Pharmacology and Therapeutics.

Section on Pathology and Physiology.

Main floor of the Lyceum Theater:

Section on Surgery, General and Abdominal

Section on Obstetrics, Gynecology and Abdominal Surgery.

Second floor of the Lyceum Theater:

Section on Ophthalmology

Section on Laryngology, Otology and Rhinology.

Loring Theater:

Section on Dermatology and Syphilology

Section on Urology.

Marigold Ballroom:

Section on Nervous and Mental Diseases

Section on Orthopedic Surgery.

Auditorium of Leamington Hotel:

Section on Radiology.

Visiting women will be entertained with teas, luncheons and automobile rides, whereby opportunity will be given to see the environs of Minneapolis and Saint Paul. The Women's Auxiliary of the Minnesota State Medical Association are planning to take part in the entertainment of the wives of the visiting doctors.

More detailed information has appeared in the A. M. A. Journal, particularly the issue of May 12. Information will also be obtainable at the Auditorium headquarters during the convention.

One of the features of the convention will be the clinics to be conducted by eminent specialists on Monday of convention week. This is of sufficient interest to warrant publication of the proposed program.

## CLINIC PROGRAM

9:00-9:45 A. M.

Kidney Disease, Sinus Disease, Feeding Disorders, Chronic Infections of the Upper Respiratory Tract of Children

WILLIAM MARRIOTT, M.D.  
Saint Louis, Missouri

9:45-10:30 A. M.

Diagnostic Clinic of Headaches of Nasal and Other Origins

ROY A. BARLOW, M.D.  
Madison, Wisconsin

10:30-11:15 A. M.

Osteomyelitis

WINNETT ORR, M.D.  
Lincoln, Nebraska

11:15-12:00 M.

Pulmonary Tuberculosis and Bronchiectasis

F. M. POTTINGER, M.D.  
Monrovia, California

1:00-1:30 P. M.

Injection Treatment of Varicose Veins

DEXTER WITTE, M.D.  
Milwaukee, Wisconsin

1:30-2:00 P. M.—Open

2:00-2:45 P. M.

Goiter

F. H. LAHEY, M.D.  
Boston, Massachusetts

2:45-3:30 P. M.

Diabetes

E. P. JOSLIN, M.D.  
Boston, Massachusetts

3:30-4:15 P. M.

Pernicious Anemia

J. H. MUSSER, M.D.  
New Orleans, Louisiana

4:15-5:00 P. M.—Open

### STATE MEDICAL MEETING

The State Association holds its annual meeting at the time of the A. M. A. convention in Minneapolis. The sessions will be limited to the meetings of the Council and the State House of Delegates. No scientific program will be held.

The Council will first meet at 4 p. m., Sunday, June 10, in one of the parlors on the mezzanine floor of the Nicollet Hotel, and again Tuesday morning at 9 o'clock.

The House of Delegates will convene Monday morning, June 11, at 9:30 o'clock in the rooms of the Hennepin County Medical Society, Donaldson Building, Minneapolis, and will reconvene at 2 o'clock in the afternoon. The last meeting for the election of officers and completion of business will be at noon, Tuesday.

Copies of the various committee reports are being sent to the delegates as soon as they are received by the secretary.

### HENNEPIN COUNTY MEDICAL SOCIETY

Dr. N. O. Pearce has been elected president of the Hennepin County Medical society for 1929. He will succeed Dr. A. E. Hedback, who is president during the current year. Other officials elected are Dr. Edwin L. Gardner, first vice president, and Dr. A. H. McFarland, second vice president. Two members were elected to serve three years on the executive committee. They are Dr. J. M. Hayes and Dr. George Douglas Head. Dr. J. F. Corbett and Dr. E. K. Greene were elected for three-year terms to the board of censors; and Dr. J. W. Bell and Dr. S. Marx White to three-year terms on the board of trustees.

### STEARNS-BENTON COUNTY MEDICAL SOCIETY

At the annual meeting of the Stearns-Benton County Medical Society the following officers were elected: President, A. Mahwald, Albany, Minn.; vice-president, A. A. Meyer, Melrose, Minn.; secretary-treasurer, J. P. McDowell, St. Cloud, Minn.

Dr. C. B. Lewis, St. Cloud, was elected with Dr. P. E. Stangl, St. Cloud, as alternate.

Censors elected are: C. S. Sutton, St. Cloud, to serve till 1929; R. N. Jones, St. Cloud, to serve till 1930; W. H. Freisleben, Sauk Rapids, to serve till 1931.

### REDWOOD-BROWN COUNTY MEDICAL SOCIETY

Officers elected at the recent annual meeting of the Redwood-Brown County Medical Society for the en-

suing year are: President, Geo. B. Weiser, New Ulm; vice president, Cornelius Saffert, New Ulm; secretary-treasurer, Wm. A. Meirding, New Ulm; censor for three years, Theo. Hammermeister, New Ulm.

Dr. F. H. Dubbe, New Ulm, was elected delegate for the 1929 state convention, with Dr. Carl D. Kolset, Sanborn, as alternate.

## OF GENERAL INTEREST

Dr. L. A. Weissgerber, formerly of Brownston, Minn., is now associated in practice with Drs. Vogel and Seifert of New Ulm.

Dr. P. L. Halenbeck, formerly located at Crosby, Minnesota, has taken office in the Guaranty Trust Building, St. Cloud, Minnesota.

Dr. Russell Gates, formerly of Minneapolis, is now associated with the Northwest Clinic at Minot, North Dakota, in the capacity of roentgenologist.

Dr. Wm. F. Mercil, a graduate of the University of Minnesota, who recently completed his internship at St. Mary's Hospital in Duluth, has located at Crookston, where he is on the staff of the Northwestern Clinic.

Dr. and Mrs. Charles N. Hensel and their children of Saint Paul sailed May 10 from New York on the French liner, De Grasse, for Europe. They will spend the summer in Austria and will arrive home about September 17.

Dr. F. L. Norin who had practiced for many years at Roseau, Minn., died at that place, April, 8. Dr. Norin has practiced in the northern part of the state ever since this graduation from the Saint Paul Medical College in 1886.

The Northwest Regional Association, consisting of the officers from the State Medical Association of Wisconsin, North Dakota, South Dakota, and Minnesota will meet Sunday, June 10, at 2:00 o'clock at the Nicollet Hotel, Minneapolis.

At the annual meeting of the Staff of the Fairview Hospital, Minneapolis, the following were elected officers for the ensuing year: President, Dr. Ivar Sivertsen; vice-president, Dr. Looe Baker; secretary-treasurer, Dr. A. W. Dahlstrom.

Dr. A. H. Pedersen delivered the president's address before the Minnesota Pathological Society at the annual meeting held Tuesday, May 15, at the Institute of Anatomy, University of Minnesota. His subject was "Diseases of the gallbladder."

Dr. John A. Moga on completing his internship at the Ancker Hospital, Saint Paul, July 1, will practice his profession in Saint Paul and will take charge of the practice of Dr. F. V. Langenderfer, during the latter's visit to California in July and August.

Representatives of all the hospitals in Saint Paul, for the most part the superintendents, have organized for publicity purposes. Material for lay consumption will

be given out by the hospital representatives with the coöperation of the office of the Saint Paul Association.

Minnesota is recovering from a widespread epidemic of influenza, the exact extent of which cannot at the present be accurately determined. While most of the cases were comparatively mild, the usual complications of sinus and ear involvement and some serious pneumonia were in evidence.

Invitation is extended to members of the profession to attend the monthly clinical conference in obstetrics and gynecology held at the Minneapolis General Hospital the last Tuesday in each month. Those desiring to be notified of these meetings each month should communicate with Dr. F. L. Adair, Minneapolis General Hospital.

A survey is being made through Polk County on behalf of the crippled child. A field nurse is checking a school census recently taken in the city and rural schools to classify every case so it can be shown the possibility of corrective measures. This movement is fostered by the Rotary Club of Crookston coöperating with the local unit of the American Red Cross.

Dr. E. T. Thompson, who has been assistant superintendent of the Ancker Hospital, Saint Paul, for the past four years, will leave the first of June to take up his duties as administrator of the Indianapolis University Hospital, Indianapolis, Indiana. Dr. M. Davidson, who has been in charge of the outpatient department at Ancker Hospital, will succeed Dr. Thompson as assistant superintendent.

The Minnesota State Board of Health, Old Capitol, Saint Paul, have issued and are now distributing a "List of Persons Lawfully Authorized to Practice Healing in the State of Minnesota" as provided by Chapter 149, Session Laws, Minnesota, 1927, which requires that "Within thirty days after receiving from the secretaries of the several examining boards any of the lists of persons lawfully engaged in the practice of healing in this state as by this section provided, the State Board of Health of the State of Minnesota shall cause such lists to be printed and a copy thereof to be sent to each city, village, or district health officer and each sheriff and county attorney in the state."

The University of Minnesota Band, under the direction of Michael Jalma, will officially appear at the Olympic Games to be held in Holland this summer. The band will make an extended tour of Europe, and one of the appearances scheduled on the itinerary is the Olympics. On July 30 the organization will be a feature attraction at the great mecca of nations. They will also appear in concert. The University Band, the first officially designated band to appear at the Olympic Games, is composed of sixty accomplished musicians selected from the combined Military, Concert, and Varsity bands on the campus. The men who are

making the trip are not only musically competent, but are truly representative university students. The European tour was made possible by "University Appreciation Day," which was held May 5.

The Women's Auxiliary of the American Medical Association, with component auxiliaries in thirty-one states, has so increased its activities as to warrant the publication of "The Journal," the first number of which appeared in January of this year. The Journal serves to coöperate the activities of the various state auxiliaries and offers a medium for the publication of articles bearing on subjects allied to medical practice.

Graduates of Northwestern University Medical School of Chicago will hold an alumni dinner at the Minneapolis Athletic Club, Wednesday, June 13, at 6:30 P. M. Dean Cutter and other members of the faculty will address the gathering. It is announced that wives are invited. Tickets are \$2.00. Reservations should be sent to Dr. F. S. McKinney, 532 La Salle Building, Minneapolis, Minn. A large attendance from the Northwest Alumni is expected and earnestly requested.

#### TWENTY-FIFTH ANNIVERSARY HENNEPIN COUNTY

##### TUBERCULOSIS ASSOCIATION

The silver anniversary of the Hennepin County Tuberculosis Association, to be celebrated June 15, marks the reduction of the Minneapolis death rate from 244 to 61 per hundred thousand persons, a decrease of 75 per cent. In this time, also, tuberculosis has been moved nationally from the leading cause of death, to sixth in the causes of human mortality.

The Association was organized in 1903 as the Anti-Tuberculosis Committee of the Associated Charities, and impetus to the work was first given by Mrs. George H. Christian, who urged that aid be extended to the tuberculous poor in their homes.

Twenty-five years ago Minneapolis had no sanatoria or tuberculosis hospitals, no tuberculosis clinics, or nurses, and no program aimed at the prevention and cure of the disease. Through the Association's efforts in coöperation with all public and private organizations interested in tuberculosis, there are now nurses who both educate and give bedside care; free clinics in city and county for those unable to pay a private physician; a home for discharged patients who are homeless, and a free employment service for those able to work.

In the 17 years that the Association served under the Associated Charities, and the 8 years it has been conducted as a separate corporation, there have also developed adequate hospital and sanatorium facilities for tuberculosis patients. Minneapolis, in fact, has more than twice the number of beds per annual death, while the national standard is one bed per annual death.

At the same time the Association has carried on a

continuous campaign of education of the public in the prevention and cure of tuberculosis.

To observe the twenty-fifth anniversary of the Association's founding, a complete history of its achievements is being prepared for the noon meeting scheduled June 15, at which past presidents and honorary members will be guests of honor. Delegates enroute to the National Tuberculosis Association meeting in Portland will also attend.

Speakers on the Minneapolis program will include Dr. Linsley R. Williams, managing director of the National Tuberculosis Association, director of the New York Academy of Medicine, and president of the New York City Tuberculosis Association; Mr. Philip P. Jacobs, publicity director of the National Tuberculosis Association, and Mr. Godias J. Drolet, statistician for the New York City Tuberculosis Association.

Dr. N. O. Pearce, president, will preside at the anniversary meeting of the Hennepin County Tuberculosis Association.

#### MEDICAL ALUMNI REUNION

Minnesota Medical Alumni from 21 states will reunite in Minneapolis, Wednesday, June 13, at the Minnesota Medical Alumni Association banquet, to be held at the Nicollet Hotel, at 6:30 p. m.

Over 600 reservations have already been made with the central committee on arrangements, which are also in charge of plans to observe the 25th anniversary of the class of 1903.

Elaborate entertainment is being planned for the returning "grads," including a golf tournament to be staged at the Woodhill Country Club, beginning at 12:30, Wednesday.

Invitations will be extended to all visiting members of the American Medical Association, meeting in Minneapolis June 11-15, to attend the entertainment which will be held following the alumni banquet. Graduating medical students at the University of Minnesota will also be guests of honor, as will many former professors. Among the latter will be "Charlie" Erdman, "Tommy" Lee, "Dickey" Beard, Dean Lyon, J. W. Bell, William Watts Folwell, and President Coffman.

Special entertainment will be provided during the reunion for women guests, arrangements for which will be made by Dr. Cecile R. Moriarty.

Members of the Homecoming Committee include: Dr. N. O. Pearce, chairman of the central committee; Drs. Edwin L. Gardner, Oswald S. Wyatt, Arthur L. Herman, William H. Aurand, Wm. O'Brien, John Eldon Hynes, Don H. Daniel, W. Ray Shannon, Claude Ehrenberg, Andrew Sivertsen, Henry E. Michelson, Reuben A. Johnson, Fred A. Erb, Kenneth Allen Phelps, Dale Turnacliiff, James Martin Hayes, Fred H. Poppe, Cecile R. Moriarty, and E. B. Pierce and Paul Johnson.

Dr. Oswald S. Wyatt, president of the Minnesota Alumni Association, will preside at the banquet; "Doc" (L. J.) Cooke, will be toastmaster, and Johnny McGovern, Minnesota All-American, master of ceremonies.

## PROCEEDINGS OF THE MINNESOTA ACADEMY OF MEDICINE

Meeting of March 14, 1928

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town & Country Club on Wednesday evening, March 14, 1928. Dinner was served at 7 p. m. and the meeting was called to order at 8 p. m. by the President, Dr. John T. Hynes. There were 33 members present.

The minutes of the February meeting were read and approved.

The President appointed Dr. A. T. Mann (Chairman) and Drs. Geo. Douglas Head and A. R. Colvin a committee to draw up suitable resolutions on the death of Dr. John G. Cross, a past president of the Academy.

DR. ARNOLD SCHWYZER, St. Paul, reported an operative case, in which a large tumor was removed from the upper part of the chest. The patient was presented at this meeting.

DR. A. N. COLLINS, Duluth, read a paper entitled "The Relationship of Gallbladder Disease to Diabetes." This was illustrated with numerous lantern slides.

#### DISCUSSION

DR. A. W. IDE (St. Paul): Dr. Collins has brought to our attention in a very graphic way the association of gallbladder infection with pancreatitis.

There are various theories advanced and much work has been done to determine just how this infection from the gallbladder reaches the pancreas and just how it affects the pancreas.

There is probably some doubt as to just how this occurs; it is, however, a matter of everyday clinical history that an acute gallbladder infection is a danger to the pancreas. I would like to report a case of acute gallbladder infection that was followed by an acute pancreatitis.

*Case Report:* This woman is aged fifty-four. On September 11 she was taken rather suddenly with severe pain in the abdomen; the pain was quite generalized, but a little worse on the right side. The pain was so severe that the patient required morphin. It was accompanied by nausea, vomiting, and marked weakness. The leukocyte count was 14,000.

In twenty-four hours the pain had subsided a little and definitely located itself in the upper abdomen, diffuse at first; and then there was tenderness and some rigidity in the upper abdomen. During the next two days the pain subsided still more. The patient passed a large amount of urine, became restless, thirsty, and the mouth was dry. On the fifth day she was lethargic and thought and spoke very slowly. Her mentality was very slow.

The diagnosis of diabetic coma was made. The urine contained large amounts of glucose and acetone. This patient was put on insulin and has come through very well.

Seven days after the onset of her illness there was a 0.38 of blood sugar and a very high glycosuria. Un-

der insulin she came down to absence of glycosuria and 0.16 of blood sugar, just a little below the threshold, hence no glycosuria; but she still had an hyperglycemia.

This patient had an acute inflammation of the gallbladder with a resulting acute pancreatitis. In her past history there was nothing to suggest a diabetic condition, but there had been six attacks of gastrointestinal disturbance suggestive of gallbladder disease.

I operated upon this patient after she had recovered from her acute illness and removed a severely diseased gallbladder that contained stones. Since her operation she has had no recurrence of the trouble. There has been no subsequent sign of diabetes.

DR. BENJAMIN (Minneapolis): I have a diabetic case with gall stones in the hospital at the present time. The patient came to the office while I was out of town in January. She became sugar-free under treatment and about a week or ten days ago I operated on her. At operation I found the gallbladder was large, adherent to the liver which was sclerotic in areas, and the pancreas was enlarged. There were a number of adhesions around the gallbladder and a number of stones in the cystic duct. Two days before I operated, she had gall-stone colic. We have not made tests of the blood and urine lately. Right after the operation the sugar returned. Now on proper diet she is gaining and feels very well.

I have always felt that there was occasionally some relationship between gallbladder disease and diabetes. One can have disease of the pancreas without producing diabetes, but does operating the diseased gallbladder ever overcome the diabetes. I recall one case in which that seemed to have occurred some years ago. I drained the gallbladder and the last report we had on the case was that she was sugar-free and practically well.

DR. COLLINS (in closing): It is true that cholecystitis and gall stones are very common findings. Mentzer of Rochester found, I believe, that what pathologists regard as cholecystitis is almost a universal finding at autopsy.

The point I wished to bring out is that diabetes and gallbladder disease are associated conditions; and to show in tabular form these associations; also by tabulation to see if there were any conclusions which might be drawn.

I do not mean to suggest that chronic cholecystitis is invariably a precursor of diabetes; I do not mean to say that it is not. We may find out some day that it is a larger factor than we now believe.

These cases I have chosen from autopsy material over a six-year period. These showed 32 per cent incidence of gallbladder disease. Some one else found 38 per cent of incidence in a smaller series.

From the anatomical standpoint, I believe it has been estimated that 53,000 islands of Langerhans are present on the average in the pancreas and those chiefly in the tail of the pancreas. In the earlier stages of cholecystitis, with chronic inflammation of the pancreas, one often finds swelling in the head of the pancreas and no sugar in the urine. Suppose this condition should go on from year to year untreated. Shall we then find in the older cases that this process has gone on until there are chronic changes involving the tail of the pancreas as well as the head and a greatly reduced number of islands of Langerhans and symptoms of diabetes clinically?

Dr. Ide's case is very interesting. I have one in the hospital now very much like the one he describes. A swollen head of the pancreas was found and patches of fat necrosis on the omentum.

There are a number of problems and some of these problems are far-reaching: Why should it be of more common occurrence among women? Has the type of infection anything to do with the situation? Or have the infections that women are subject to anything to do with it?

Some one mentioned the subject of associated arteriosclerosis. Of course we have always associated this with diabetes, but we have never definitely shown that they have a direct relationship. And can we say that they do not have a common factor—infection?

This has been a very interesting study. I hope there will be some concerted effort in the profession to see if we cannot establish a more definite relationship between these two clinical entities.

DR. F. W. SCHLUTZ (Minneapolis) gave a report on the Pan-American Conference on Child Hygiene, and his impressions of South American Pediatric Clinics.

The meeting adjourned.

CARL B. DRAKE, M.D.

## RECONSTRUCTION!

There is a cure for everything, including curiosity, according to the "American Legion Weekly." An inquisitive old lady, says the veterans' journal, was bending over the bed of a wounded soldier in a reconstruction hospital.

"Where you wounded in the head, my boy?" she asked.

"No'm," replied a faint but polite voice. "I was shot in the foot and the bandage has slipped up."

## INSIDE INFORMATION

A little negro schoolgirl, down in Florida, in answer to the question "What is anatomy?" wrote the following:

"Anatomy is a human body. It is divided into three parts—the haid, the chest, and the stummick. The haid holds the brains, if there is any; the chest holds the liver and the lites, and the stummick holds the entrails and the vowels, which are a, e, i, o, u, and sometimes w and y."

## NEW AND NON-OFFICIAL REMEDIES

The following articles have been accepted by the Council on Pharmacy and Chemistry of the American Medical Association:

### ABBOTT LABORATORIES

Acetarsone

Amiodoxyl Benzoate-Abbott

Ephedrine Sulphate-Abbott

### H. K. MULFORD Co.

Diphtheria Toxin-Antitoxin Mixture, New Formula,  
Park-Banzhaf's 0.1 L+

Erysipelas Streptococcus Antitoxin (Concentrated)-  
Mulford

### NON-PROPRIETARY ARTICLES

Amiodoxyl Benzoate

### THE CHENEY CHEMICAL Co.

Ethylene-Cheney

### E. FOUGERA & Co.

Lipiodol-Lafay

Lipiodol Radiologique Descendant

Lipiodol Radiologique Ascendant

### MEAD JOHNSON & Co.

Mead's Powdered Boilable Protein Milk

### SWAN-MYERS Co.

Ephedrine-Swan-Myers

Ephedrine Inhalant-Swan-Myers

### WINTHROP CHEMICAL Co., INC.

Phanodorn Tablets, 3 grains.

Diphtheria Toxin-Antitoxin Mixture, New Formula, Park-Banzhaf's 0.1 L+ (New and Non-official Remedies, 1927 p. 341).—This product is also marketed in packages of one 10 c.c. vial, representing three immunizing treatments. H. K. Mulford Co., Philadelphia. (Jour. A. M. A., August 20, 1927, p. 600.)

*B. Acidophilus Milk-Adohr*.—A milk culture of *B. acidophilus* which contains not less than 250 millions of viable organisms (*B. acidophilus*) per c.c. at the time of sale. For a discussion of the actions and uses of bacillus acidophilus preparations see Lactic Acid-Producing Organisms and Preparations, New and Non-official Remedies, 1928, p. 228. Laboratory Division of the Adohr Creamery Co., Los Angeles, Calif.

*Phanodorn Tablets, 3 grains*.—Each tablet contains 3 grains of phanodorn (New and Non-official Remedies, 1928, p. 96). Winthrop Chemical Co., Inc., New York.

*Solution Ephedrine Sulphate-P. D. & Co.*, 3 per cent.—A 3 per cent solution of ephedrine sulphate-P. D. & Co. (New and Non-official Remedies, 1928, p. 178). Parke Davis & Co., Detroit. (Jour. A. M. A., April 21, 1928, p. 1291.)

*Ephedrine-Swan-Myers*.—A brand of ephedrine-N. N. R. (New and Non-official Remedies, 1928, p. 174.) It is also supplied in the form of Ephedrine Inhalant-Swan-Myers, a 1 per cent solution of ephedrine in light liquid petrolatum. (Jour. A. M. A., April 28, 1928, p. 1377.)

## PROGRESS

Abstracts to be submitted to Section Supervisors.

Members are urged to abstract valuable articles which they run across in their reading and send the abstracts to the physicians in charge of the respective sections. In order to avoid duplication it would be well to communicate with one of the section supervisors before the article is abstracted.

## MEDICINE

### SUPERVISORS:

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### SECONDARY ANEMIA: ITS TREATMENT:

Jean Jongewaard, M.D., Iowa State College, Ames Iowa (Medical Woman's Journal, XXXIV, 327, 1928). Secondary anemia as one of the problems of a health service is discussed. The students are given a complete physical examination with routine blood count and urinalysis being made. In many, infected tonsils or teeth or other bodily ailments may be accounted responsible but in approximately 50 per cent no positive physical or laboratory findings are present. The cause for this is discussed: Dr. Clifford Allbutt of England is quoted, who believes all girls in puberty are potentially chlorotic, and also Dr. Lloyd Jones of England, who lays the cause to a toxic excess of internal secretions of the sexual glands. It is the consensus of opinion that a lack of sufficient iron content in foods together with insufficient sunshine, is the chief factor; the lack of sunshine being the greater of the two. A study of the comparative results obtained by ultra-violet therapy, iron administration and dietary treatment was made. Thirty-six cases were treated with air cooled quartz lamps. The average hemoglobin increased from 63 per cent at the start of the treatments to 78.8 per cent at the end of the treatments. Thirty-three treatments were given to each girl over a period of 6 weeks, the average gain in hemoglobin being 15.3 per cent, while the results obtained from intravenous iron therapy gave 1.9 per cent gain in the hemoglobin in six cases and a gain of 11.45 per cent in five cases treated with dietary methods.

The technic of the ultra-violet therapy is as follows: Exposure of the entire body, beginning with 1 minute on each side of the body, increasing the time up to 15 minutes on each side at the end of 3 or 4 weeks. A rest of 1 to 2 weeks is then given, during which time the hemoglobin drops in each case, but with resumption of treatments it again rises and as a rule remains stable. In three cases receiving no benefit from the

quartz lamp, dietary methods were used together with radiation with pleasing results. In summarizing Dr. Jongewaard states that although their work has not been extensive she believes that ultra-violet therapy may very definitely be given first place, with food therapy a close second, while a combination of the two would probably be ideal.

D. W. HUTCHINSON, M.D.

## SURGERY

### SUPERVISORS:

DONALD K. BACON,  
LOWRY BLDG., ST. PAUL

VERNE C. HUNT,  
MAYO CLINIC, ROCHESTER

**PERFORATION OF DIAPHRAGM:** The Result of Intra-abdominal Suppuration; Report of Unusual Cases: J. H. Clark, M.D. (*Arch. of Surg.*, Vol. 16, No. 4. Pp. 864-867). Secondary foci set up in pleural cavity by extension through blood or lymph streams are not uncommon, but extension by perforation of the diaphragm is much less frequent and is usually the result of subdiaphragmatic abscess. Lang in a series of 173 cases of these abscesses found 67 perforations and Martinets found 33 in 138 cases.

The site of the perforation depends on the site of the abscess. According to Barnard the commonest site for subphrenic abscess is between the convexity of the right lobe of the liver and the dome of the diaphragm and between the falciform and right coronary ligaments of the liver. The intraperitoneal area corresponding to pouch of left kidney, is second in frequency and usually results from intra-hepatic suppuration or rupture of a gastric ulcer. Third commonest is the uncovered space between coronary ligaments and the right posterior intraperitoneal location about pouch of right kidney is also a frequent site.

The author cites three case histories illustrating three different types of abdominal inflammation responsible for perforation of diaphragm. The first, a typical perinephritic abscess which formed a secondary accumulation between layers of coronary ligament in right extraperitoneal space causing a perforation 2 mm. in diameter in highest point of dome of diaphragm. The second, an extensive retroperitoneal inflammation resulting from a retrocecal appendix with extraperitoneal rupture of the dome of the diaphragm between the coronary ligaments of the liver. The third and most unusual occurred during the course of an acute suppurative peritonitis following a criminal abortion and resulted in a perforation of the left dome, 2 cm. in diameter. The author has been unable to find a similar case report in a search of medical literature.

GEORGE MALMGREN.

**EXTIRPATION OF THE URINARY BLADDER:** L. J. Lindstrom (*Acta Cheviergica Scandinavica*. 7. III, 1928, LXIII. Fasc. II. Pp. 146). The author relates two cases of carcinoma of the urinary bladder treated by complete extirpation.

Case 1, woman, aged 52, with bladder symptoms for 1½ years. Cystoscopic examination showed multiple carcinomatous papillomata around the right urethral orifice and in the neighborhood of the internal urethral orifice. Operation of total cystectomy performed in one-stage. The ureters were implanted in the sigmoid. Patient discharged about two months after the operation. Subsequent death secondary to pyelonephritis three months later.

Case 2, man, aged 61, with bladder symptoms for ten months. Cystoscopy revealed an infiltrating tumor in the vesical trigone. Manclair-Enderlen-Krone's operation in two stages. First stage: artificial anus established by making left inguinal McBurney colostomy; separation of rectum and lowermost part of sigmoid colon from the rest of the gut and implantation of the ureters into the rectal stump of the sigmoid. One month later extirpation of the urinary bladder and prostate gland. Discharged healed. Death occurred 7½ months after extirpation of the bladder as a result of peritoneal metastases.

The author recommends operative method used in the second case and operation in two stages.

The author notes that Bardenhauer in 1897 performed the first extirpation of the urinary bladder for carcinoma. The paucity of cases done he believes due to the prohibitive primary mortality—mostly attributable to ascending pyelonephritis. A mortality of 40.2 per cent appears in Scheeles' report of 63 cases. The disposal of the ureters, he believes, is still the central problem in total cystectomy.

JOHN R. HAND, M.D.

**SUPPURATIVE DISEASES OF THE CHEST:** George P. Muller, M.D., F.A.C.S. (*Surg. Gyn. and Obst.*, XLVI, 1928, No. 2. Pp. 193-198). A brief summary of the etiological factors, the diagnosis, and the treatment of suppurative conditions within the chest, including empyema, lung abscess, bronchiectasis, and mediastinitis.

Empyema, which is practically always the result of a pneumonia, requires prompt recognition. Operation during the course of the pneumonia entails a mortality of 50 per cent and should therefore be postponed until the sixth to eighth week. Local and gas anesthesia should be employed. The "closed method" of drainage is advisable during the pneumonic stage, but should be supplanted by rib resection in the post-pneumonia period, if the physical signs and x-ray findings indicate a walled-off abscess. The latter method will probably have to be employed in most cases.

Lung abscess has varied etiology. About 30 per cent are postoperative and of these one-half follow tonsillectomies, probably because of septic emboli rather than by aspiration. The remainder are due to the pneumonias and the aspiration of foreign bodies. The diag-

nosis is made by the history, the sputum, the fever, the x-ray picture, and by bronchoscopic examination. Lipiodol is of value in the x-ray diagnosis. A centrally located abscess easily accessible from the bronchus is best treated by postural drainage, bronchoscopic aspirations, and general measures for increasing patients' resistance. Peripherally located lesions or those within the upper lobe and therefore difficult of access by way of the bronchus should be treated surgically. This consists of opening the cavity by cautery after having produced adhesions between the visceral and parietal pleura, opening all pockets around the cavity, and then allowing the cavity to granulate in from the base. A secondary thoracoplasty may be required. Phrenectomy is of little consequence.

Bronchiectasis usually follows parenchymal inflammations, such as influenzal pneumonia, which produce a fibrosis, which in turn twists and obstructs the bronchi. A secondary suppurative bronchitis then produces the characteristic purulent expectoration. Foreign bodies and occasionally the infarction by mildly septic emboli must also be considered as etiological agents. X-ray findings either with or without lipiodol are the chief diagnostic aids. In the treatment of this condition, Graham advocates actual cautery of the entire involved area if localized to one lobe. Hedblom employs graded extrapleural thoracoplasty for diffuse unilateral bronchiectasis, while Whittemore has recently advocated the amputation of entire lobes.

Suppurative mediastinitis may be traced to adjacent osteomyelitis, suppuration in the neck, and lymph nodes. Early diagnosis is essential, and this should be followed by early drainage. In anterior mediastinitis drainage is relatively simple, whereas in the posterior variety the approach is more difficult. In the latter type, the area may be reached either through a cervical mediastinotomy or by the dorsal route as described by Heidenhain.

In discussing this paper, Doctor Hedblom differs as regards the "closed method" of drainage in empyemas. He feels that it is the treatment "par excellence" in that it does not produce a pneumothorax and thereby avoids decreasing of respiratory capacity. It can be employed early, infected fluid can be withdrawn, antiseptic irrigations can be carried on, and the cavity can be kept empty. In his opinion, lung abscess following tonsillectomy is probably due to aspiration rather than embolic. Pulmonary compression by pneumothorax, phrenic neurectomy, and thoracoplasty is of increasingly greater importance in the treatment of bronchiectasis.

H. R. FEHLAND, M.D.

**SOME UNDERLYING PRINCIPLES OF INTES-TINAL SURGERY:** J. Shelton Horsley (Ann. of Surg., March, 1928. LXXXVII. Pp. 387-394). The fact that obstruction in the upper intestinal tract is more rapidly fatal than obstruction in the lower intestinal tract is partly explained by more rapid dehydration in the former. Some surgeons think dehydra-

tion is the chief, if not the only, danger, in high obstruction over the dangers of low obstruction. It has been demonstrated that it takes smaller degrees of compression in the upper small intestine to produce an obstruction than in the lower small intestine or colon. Clinically a degree of closure of the lumen that would cause marked symptoms in the upper small intestine will produce but little disturbance in the colon or lower intestine.

The type of obstruction should be considered; one which interferes with the circulation, such as a volvulus, is usually rapidly fatal and requires prompt surgical treatment. Toxic material formed in the bowel produces a rapid, weak pulse, fall in blood pressure, vomiting, cold clammy skin and other phenomena of shock. A simple mechanical obstruction on the other hand due to a band or growth from the bowel causes some pain and increased peristalsis, but may gradually encroach upon the lumen till there is complete obstruction for days without causing alarming symptoms. Post-operative obstruction is usually of the mechanical type, occurring chiefly in the small bowel. Constant regurgitation and vomiting will rapidly dehydrate the patient. The contents of the upper intestinal tract are relatively sterile, however. The slightest soiling of peritoneum with contents from the colon may bring disaster.

KENNETH MURRAY, M.D.

**RESULTS OF PUNCH PROSTATECTOMY:** H. C. Bumpus and E. B. Vickery (Am. Jour. Surg., Mar., 1928, Vol. IV. Pp. 328-332). The necessity for a cystoscopic examination is pointed out in cases presenting the symptoms of urinary obstruction and frequency out of proportion to the rectal enlargement of the prostate. Such cases reveal, on cystoscopic examination, hypertrophy of the median lobe, subcervical glands or bar formation at the bladder neck—the result of inflammatory changes in the mucosa and underlying prostatic tissue.

Guthrie, a century ago, pointed out the median bar as a prostatic atrophy with inflammatory changes rather than a hyperplastic phenomena.

Young, 1909, devised a median bar excisor by modifying his urethroscope. This instrument has the disadvantage of indirect vision and causes the operator to work in a bloody field without visual guidance. Three accidents are recorded as a result of working with the indirect scope; two occurring in this series and one at Young's Clinic.

Braasch, in 1918, modified his direct cystoscope and developed a knife punch instrument that allows visualized placing of the instrument, a rapid emptying of the bladder clots, giving the operator a clear field to work in; by using a direct scope at the completion of the punch operation, the bleeding points may be accurately controlled by fulguration with a small electrode inserted through the catheter guide.

Caulk, in 1929, modified Young's punch by the addi-

tion of a cautery blade. This adds to the disadvantage of the Young punch—a cauterized operative field that serves as a stage for the lighting up of local and ascending urinary infection, and in addition secondary hemorrhage where the slough comes away after eight or fourteen days.

It is pointed out that following a punch operation with the Braasch instrument the operative field is perfectly dry before the patient is allowed to leave the table. Under ordinary circumstances a catheter is not inserted into the urethra. In this series of 192 cases, postoperative hemorrhage occurred in three cases; one case requiring further electrocoagulation, and two, cystostomy.

The punch operation is emphasized as a palliative procedure in suitable cases of prostatic carcinoma and the method of choice in many cases of postoperative urethral deformity and obstruction.

In the selection of cases for punch prostatectomy the most important factor is the presence or absence of accompanying lateral lobe enlargement. If present, the removal of the median obstruction allows the lateral urethral walls to approximate further, thus increasing the obstruction.

An analysis of the end-results in 85 cases of the 157 punch prostatectomies done prior to Jan. 1, 1927, shows 27 cases (32 per cent) to be free of urinary symptoms. In 39 cases (46 per cent) there is improvement in the obstruction present prior to operation, but a persistence of a minor degree of frequency. This gives a total number of cases of 66 (78 per cent) with improvement following operation; corresponding with Caulk's report of 323 cases with 80 per cent improvement and Young's 355 cases with equally good results. Nineteen cases (22 per cent) showed no improvement. Analysis of this group shows nine of the cases required subsequent prostatectomy at which time lateral lobe involvement was demonstrated. Seven cases in this group had hypertrophy of the lateral lobes in addition to the median lobe involvement at the time of the punch operation. The pathological report was inflammatory in 17 of these cases where failure to relieve symptoms was observed.

It is interesting that observations here coincide with those of Caulk, that practically all poor results are manifested before six months.

JOHN R. HAND, M.D.

**SUBCUTANEOUS INJURIES OF THE ABDOMINAL VISCERA:** B. M. Vance, M.D. (*Arch. of Surg.*, March, 1928, XVI. Pp. 631-679). The kidneys are not so commonly ruptured by blunt force as either the liver or the spleen. A bilateral lesion is rare. The perirenal fat in the child is scanty and as this fat protects the organ from violence to a certain extent, its amount has an important bearing on the complications of rupture. Only marked grades of violence applied to the anterior abdominal wall will produce rupture of the kidney, while relatively slight violence applied to the lumbar region may produce a lesion.

Experimentally kidneys engorged with blood rupture more easily than those comparatively bloodless. When the parenchyma is rendered especially friable by disease, like renal tuberculosis, the rupture may occur under such slight trauma that it can be classified as spontaneous.

The majority of ruptures are at right angles to the longitudinal axis. These lesions may be classified as: (1) Separation of fatty covering from fibrous capsule without rupture of parenchyma, (2) ruptures of substance of kidney not involving pelvis or pyramids, (3) severe ruptures involving either pelvis or pyramids, (4) more extensive ruptures which shatter the kidney into fragments, (5) severe renal trauma accompanied by partial or complete tearing of blood vessels and ureter. A massive swelling may develop in the lumbar region from the perirenal accumulation. The fluid causes an inflammatory reaction and may form a cyst-like structure around the kidney, which is called a pseudohydronephrosis by some. This complication develops about a week after trauma. A direct injury to the ureter may produce stricture with resulting true hydronephrosis. This latter condition takes weeks or months to form. About 5.7 per cent of renal injuries result in severe intra-abdominal hemorrhage and usually occur in children where the perirenal fatty capsule is poorly developed.

In a few instances when the renal pelvis is torn, together with the peritoneum, urine will be extravasated and peritonitis results. The symptoms are fairly consistent, pain and tenderness in the right or left flanks, as the case may be, and blood in the urine. Mild forms of injury with hematuria, however, are fairly prevalent and not a few of these cases recover under expectant treatment. In general, if the symptoms are mild, an operation is not indicated. Usually the prognosis is favorable. There is no doubt that some of the ruptures of the kidneys that evoke symptoms are of slight grade and that patients will recover without operation. It is just as certain that patients with more severe renal injuries require operation.

KENNETH MURRAY, M.D.

**THE ROLE OF ABERRANT VESSELS IN THE PRODUCTION OF HYDRONEPHROSIS:** Charles P. Mathe, M.D. (*Jour. of Urology*, Vol. XIX, No. 3. Pp. 211-240). Attention is called to the high incidence of anomalous renal vessels; Eisendrath, Strauss and Quain's Anatomy reports them in 20 per cent of autopsy material. Broman studying sheep, pig, cat, rabbit and human embryos stressed the existence of the peri-aortic plexus from which the renal artery is derived; pointed out that the channel for the renal artery is selected mechanically, and, depending on this selection, there might result multiple renal arteries and veins of every conceivable type of branching. Anomalous vessels may arise from the aorta, main renal artery, spermatic, inferior mesenteric or middle sacral arteries.

It is pointed out that the great majority of anomalous vessels cause no obstructive symptoms. One hundred

fifty cases of hydronephrosis associated with movable kidneys are reviewed in which eleven had an aberrant vessel causing an ureteral kink (nine of the obstructions were due to arteries and two to veins). Seven occurred on the right and four on the left side. Eight occurred in females and three in males.

The anomalous vessel causing the obstruction is practically always found running behind the ureter and serves as a fixed support for the ureter to sag over in a small percentage of movable kidneys. Hydronephrosis secondary to aberrant vessels is characterized by intermittent, regular attacks of renal pain occurring over a period of months or years, the onset of which is usually in the young adult. This complication occurs more frequently in patients predisposed to movable kidneys who present the body form consisting of an elongated thorax associated with a small abdominal circumference.

The ureteral kink may be demonstrated by a pyelogram in the vertical position. The dilatation of the ureter and pelvis always commences just above the point of obstruction by the vessel. The enlarged kidney may be palpated in 40 per cent of the cases.

In the treatment of these cases, medical efforts to aid the kidney in maintaining its normal position are first instituted in the way of rest in bed, with the foot elevated, diet and abdominal support. If conservative measures fail to relieve the symptoms, surgical intervention should be employed.

In early cases division of the vessel, freeing adhesions about the obstructed point and suspension of the kidney will suffice. In the more advanced type presenting the narrowing of the uretero-pelvic junction it is necessary to widen it by a plastic operation. In cases with an infected hydronephrosis, nephrectomy is the method of choice.

The author advocates anchoring the kidney to the twelfth rib, quadratus lumborum, and anterior abdominal musculature, by either 20 day chromic sutures into the kidney or anchorage by splitting and suturing the renal capsule to these points. Patients are kept in bed for three weeks, lying on the operated side with the foot of the bed elevated to promote the formation of adhesions.

Interesting and successful end-results are reported. In eight cases division of the vessel, liberation of the kink from adhesions and nephropexy was followed by complete relief of symptoms. In two cases a plastic operation was utilized to widen the uretero-pelvic juncture. Subsequent study revealed the kidney to be in good position with a straightening of the ureteral kink, elimination in size of the hydronephrotic sac, increase in renal function and disappearance of chronic infection due to stasis. Three cases required nephrectomy; two of them made an uneventful recovery; the third, however, an elderly lady with a long-standing history and a totally destroyed kidney, succumbed on the fifth post-operative day.

JOHN R. HAND, M.D.

## PEDIATRICS

### SUPERVISORS:

CHESTER A. STEWART,  
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MANKATO CLINIC, MANKATO

AN INQUIRY INTO THE EFFICIENCY OF THE MODERN TREATMENT OF DIARRHEA: Edward S. Thorpe, Jr., M.D. (Arch. of Ped., March, 1928). Powers reports a mortality of 33 per cent in 36 cases treated by what he calls "A Comprehensive Method" as opposed to a mortality of 70 per cent in 19 cases treated by more or less haphazard methods. He combats the anhydremia of the early stages and secondarily considers the diet and medication of the reparation period. In 1908 and 1909, about 48 per cent of the cases discharged from the hospital really went away unimproved. But in 1924 and 1925, only 3 per cent were discharged without a satisfactory convalescence. Evidently the reparative treatment at present is more effectual. There has been a tremendous decrease in the mortality in the city without there being a corresponding decrease in the hospital mortality.

In spite of the more fundamentally sound and scientific treatment used for cases of diarrhea at present, the hospital mortality is approximately the same as in those years when attention was paid only to feeding and drugs, and not to combating anhydremia and toxemia. The modern reparation diets are more successful since most of the infants go home having gained in weight over the admission figure. The author has progressed more efficiently so far as prophylaxis is concerned than with the handling of the far advanced cases.

There has been a reduction in the general mortality of diarrhea probably due to better milk, hygiene, and early care of simple cases.

R. N. ANDREWS, M.D.

ENURESIS: Joseph K. Calvin, M.D. (Jour. A. M. A., March 17, 1928). Training of the infant to control the emptying of the bladder may be begun as early as 6 or 7 months of age. Next, at about 14 months, he must be taught to refrain from functioning (during the day) except on the chair. By eighteen months at the latest, although they may be tried at fourteen months, knit drawers or panties should be substituted for diapers. Night training should be attempted as follows: Restrict fluid after 5 p. m.; be certain that the child urinates just before being put to bed; forestall the first wetting by awakening the child between 9 and 10 p. m. and keeping him on the toilet until he urinates; place him on the toilet as soon as he awakens in the morning. Dry nights should be the rule by the time the child is from 2½ to 3 years of age.

Treatment.—Any physical defects, as, for example, phimosis, should, of course, be corrected or eliminated

if possible. The child must be taught that the habit is not desperately tragic, and must be impressed with the fact that the trouble always gets well. The mother must kindly ignore the mishaps and praise the successes highly. A visible record of successes is a very good method of helping to cultivate an atmosphere of optimism and confidence. Leave the other days blank and never mention or indicate these failures.

One of the fundamental underlying causes of most enuresis is the nervous, high-tensioned child. If the enuresis is purely nocturnal, Barbitol may be administered at bedtime (1 grain, or .065 Gm., to a child of 4 or 5 years).

R. N. ANDREWS, M.D.

**PEDIATRIC ASPECTS OF OTOLARYNGOLOGY:** McKin Marriott, M.D. (Ann. of Oto., Rhin. and Laryng., March, 1928). It is especially interesting to note that the organisms found in the mastoid antrum at the time of the operation and at autopsy have very frequently been quite different from those found in the middle ear, even when cultures of the latter were taken at the time of the first paracentesis.

Infections of the middle ear and mastoid giving rise to nutritional and gastro-intestinal disturbance are much more frequent during certain years than others.

Disturbances of infants, due to improper feeding, or to bacterially contaminated food, are certainly becoming less frequent, so that the proportion of cases in which the primary factor is infection is constantly rising. In the author's own experience over 85 per cent of all gastro-intestinal and nutritional disturbances of infants in recent years have been due primarily to infections in the ears, nose and throat.

Some infants with persistent pyuria show no improvement under the usual methods of treatment until coexistent infections in the ears, nose and throat are cleared up.

In the light of our present knowledge, treatment of the ears, nose and throat of babies assumes at least as great importance as modification of the diet.

It is the author's belief that radical operations on the sinuses of these undernourished children should not be attempted except for the most urgent indications.

It would seem rational to attempt to eliminate streptococcus infections from the nose and throat in cases of persistent hemorrhagic nephritis.

In all cases of nephrosis a careful examination of the throat and nasal accessory sinuses should be made and when definite infection is found it should be appropriately treated as in the case of any other disease. The fact must not be lost sight of, however, that these patients have very little resistance to infection and that radical operations on the nose and throat are occasionally followed by a streptococcus septicemia, peritonitis and death.

R. N. ANDREWS, M.D.

## GYNECOLOGY AND OBSTETRICS

### SUPERVISORS:

ARCHIBALD L. McDONALD,  
LYCEUM BLDG., DULUTH

L. W. BARRY,  
LOWRY BLDG., ST. PAUL

**TRUE ADHERENT PLACENTA, PLACENTA ACCRETA:** M. Reeb (*Gynecologie et Obstetrique*, February, 1928). Retained placenta is due to one of two factors: (1) Pathological physiology, either uterine inertia or hypertonus, or (2) pathological anatomy, abnormal adhesions. Only the second type is considered.

The author describes the structure of the uterus and decidua, the stratum spongiosum and the compact layer. The chorionic villi rarely extend to the compact decidua, and the normal line of separation is at the base of the spongy layer. In the truly adherent placenta there is no line of cleavage, and in attempting removal one finds that he leaves portions of the placenta attached or invades the muscularis. He reports such a case found in the course of Cesarean section which required subtotal hysterectomy. Careful microscopic studies were made of the placenta and uterus. There was marked deficiency of the decidua basalis and in places total absence, so the placental villi were in contact with or actually invading the muscularis. In some areas the adjacent muscle fibers showed hyaline degeneration. There were numerous lymphocytes but no increase in the polymorphonuclear cells, that is no inflammatory reaction. Sections through other portions of the uterus showed marked hypoplasia of the decidua vera, and in some areas remote from the placental site there was evidence of inflammation.

From a review of the literature, the usual histological findings are summarized:

1. There is commonly more or less hypoplasia of both layers of the decidua basalis or a complete lack of either layer.

2. There is hypoplasia or a total lack of the decidua vera. In the case of placenta previa accreta, the decidua vera in the fundus is normal.

3. All authors describe more or less penetration of the placental villi into the muscularis or the blood and lymph spaces.

4. There is evidence of hyaline degeneration of the adjacent muscle fibers which the author believes to be due to the action of a tryptic ferment relatively unopposed by decidua.

5. Infiltration with leukocytes of polymorphonuclear cells is not commonly described, though some have noted the presence of lymphocytes about the placental villi.

In considering pathology, the author discards the theory of inflammation or placentitis. The anatomical picture shows that placental villi are in immediate contact with uterine muscle with no intervening decidua basalis. This is due to either primary hypoplasia of

the decidua, or an overactivity of the chorion which destroys the protective decidua. He concludes that there is an actual primary hypoplasia or total plasia of the decidua which permits deep penetration of the chorionic and firm adhesions. This condition is seen in tubal pregnancy where the decidua is lacking. There is a tendency to the formation of multilobular or membranous placenta.

In a series of twenty-five cases collected from the literature, all but six died from hemorrhage during or following unsuccessful attempts at manual removal. Of those who recovered, one at six months and one at full term, the placenta was removed manually and the uterus packed. The other four underwent sub-total hysterectomy, which is the ideal treatment.

A. L. McDONALD, M.D.

**ENDOMETRIOMA IN LAPAROTOMY SCARS:** Goullieur, J. F. Martin and L. Michon (*Gynecologie et Obstetrique*, February, 1928). The author reports a personal case which occurred following a myomectomy done without opening the uterus. There was a persistent fistula which bled at the menstrual period. Later a small tumor appeared in the abdominal scar and became swollen and painful at each menstrual period. Histological study demonstrated a typical endometrioma.

The author presents a review of the literature and has collected twenty-four cases following operations as follows: Endometrioma was present in 10 cases of hysterectomy, 6 cases of salpingectomy for tumor or inflation with hysteropexy, 2 cases of myomectomy, 2 cases of traumatic perforation of the uterus, 2 cases of Cesarean section, 1 case of tubal pregnancy and in 1 case following appendectomy.

In twenty cases the uterine cavity had been opened or possibly invaded. In one case following hysteropexy a silk suture was found in contact with the tumor. In another an endometrioma was found in a perineal laceration. The interval between the original operation and the appearance of the tumor varied from a few weeks to twenty-eight years. The clinical picture is typical: a small tumor which swells and becomes painful at each menstruation. It may be confused with a late inflammatory reaction in the wound. The tumor is benign and does not recur after complete excision. It may involve the peritoneum or adhesions to the uterus. Excision must be absolutely complete. The author feels that Sampson's theory of implantation furnishes the best explanation for this type of tumor.

A. L. McDONALD, M.D.

#### NOT EXPECTED TO LIVE

"What ails Jones these days?"

"His wife's insomnia, his daughter's nerves, his mother's dyspepsia, his son's headaches and his father's rheumatism."

## EYE, EAR, NOSE AND THROAT

### SUPERVISORS:

VIRGIL J. SCHWARTZ,  
PHYS. & SURG. BLDG., MINNEAPOLIS

E. L. ARMSTRONG,  
205 W. 2nd STREET, DULUTH

**VESTIBULAR NYSTAGMUS IN NEW-BORN INFANTS:** A. Galebsky (*Acta Oto-Laryngologica*. Vol. XI. Fasc. 3). The bony vestibular apparatus is completely developed in the fetus and the new-born, and is but slightly different from that of the adult as regards size and position. The areas of the cerebellum which control the movements of the head and eyes are myelinated at the time of birth, but this is not yet true of the corresponding areas of the cerebrum.

About a hundred turning tests and a few caloric tests were done on infants varying in age from a few hours to several months. The great majority of infants were not more than a few days old, and were usually fixed in the turning chair by means of mattresses. Findings varied according to whether the subjects were awake or sleeping. When they were awake, a typical rotatory reaction, *i.e.*, nystagmus, with quick and slow component, was produced in all except two cases. However, during the turning there was practically no quick component; also, the head and eyes turned in a direction opposite to that of the turning and remained so during the test. On stopping the rotation the head and eyes immediately turned in the direction of the turning, far to one side, and with a quick component opposite to that of the rotation. This usually lasts from 4 to 8 seconds. In most cases the slow component was exceptionally strong.

Turning tests on the sleeping child, on the other hand, show no quick component whatever, after rotation; there is only a very strong slow component, so that the eyes are drawn in the direction of the turning, remaining thus for a while, and returning gradually to a normal position. It is difficult to explain the absence of a rapid component during sleep. The assumption has been made that sleep has the same effect as narcosis upon the brain, *i.e.*, depression of the cerebrum, and that the slow component is produced by the vestibular nucleus, whereas the rapid component is produced by the cerebrum itself. It has recently been shown, however, that typical nystagmus, with rapid components, has been produced in decerebrated animals. The explanation therefore is not clear, although most recent investigations tend to show that the rapid component arises, not in the brain, but in or near the vestibular nucleus. It is also probable that the usual obstetrical explanation of changes in the child's intrauterine position as being due entirely to the weight of the head, is not fully correct, since the highly developed vestibular apparatus must play an important part in determining the fetal position.

The caloric tests revealed good reactions in all cases examined. Optical nystagmus could not be produced

in the new-born; a black and white striped rotating disc was used.

To recapitulate: *During rotation*, the reaction of the new-born to turning differs from that of the adult (1) by its intensity, (2) by strong movements of the head and eyes in the direction of the slow component, (3) by the absence, complete or almost so, of the quick component. *After rotation*, the reaction of the new-born differs from that of the adult (1) by its intensity, (2) by strong movements of the head and eyes in the direction of the slow component, (3) by prominence of the slow component and (4) by shorter duration of the nystagmus and absence of reaction movements in the upper extremities.

VIRGIL J. SCHWARTZ, M.D.

**DIAGNOSIS AND DIFFERENTIAL DIAGNOSIS OF OTOGENOUS BRAIN ABSCESS:** Robert Lund (Acta Oto-laryngologica. Vol. XI. Fasc. 3). *Part I.*—Recent statistics from various sources indicate a mortality rate of 75 to 80 per cent in cases of otogenous brain abscess. This high rate is largely due to failure to recognize the condition early enough to make operation of value.

An otogenous brain abscess almost always localizes in immediate proximity to the suppurating middle ear and mastoid, that is, in the temporal lobe or cerebellar hemisphere of the same side. In the rare instances in which this does not occur the lesion is due to an infected embolus from a sinus phlebitis.

The abscess usually forms by direct extension, the tympanic or mastoid inflammation extending upward through the bony roof and forming a pachymeningitis externa. The dura, arachnoid and pia become successively inflamed and adherent to the cerebral cortex, after which the process enters the gyri fusiformis and tertius and then the first and second temporal convolutions. About half the abscesses are well-enclosed within a capsule; the remainder are not encapsulated, being due to an organism of different type and virulence with the result that a rather widespread inflammation of the surrounding brain tissue is found. In the rare cases in which the dura is not involved, the abscess doubtless develops through vessel channels in the bone and dura.

Cerebellar abscess also develops by direct extension, in the great majority of cases. One route is through the posterior wall of the antrum, anterior or posterior to the sigmoid sinus, into the posterior cranial fossa; most frequently it is anterior to the sinus, through Trautman's triangle (sigmoid sinus posteriorly, superior petrosal sinus above, labyrinth in front and medially). A second route is through the medial wall of the sigmoid or transverse sinus after liquefaction of a thrombus. A third route is through the labyrinth, following an acute or chronic diffuse suppurative labyrinthitis with complete loss of function. The process extends through the aqueductus vestibuli to the saccus endolymphaticus, which lies in a dural fold, or through the posterior semicircular canal by a bony fistula to the dura. When not well encapsulated, the process spreads medially quickly to the medulla and pons.

VIRGIL J. SCHWARTZ, M.D.

## BOOK REVIEWS

Books listed here become the property of the Ramsey and Hennepin County Medical libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

### BOOKS RECEIVED FOR REVIEW

**GYNECOLOGY FOR NURSES.** Harry Sturgeon Crossen, M.D., F.A.C.S. 281 pages. Illus. Cloth, \$2.75. St. Louis: C. V. Mosby Company, 1927.

**STRABISMUS: ITS ETIOLOGY AND TREATMENT.** Oscar Wilkinson, A.M., M.D., D.Sc., Surgeon-in-Chief, Washington Eye and Ear Hospital, Washington, D. C. 240 pages. Illus. Cloth, \$10.00. St. Louis: C. V. Mosby Company, 1927.

**PHYSICAL DIAGNOSIS.** W. D. Rose, M.D., Associate Professor of Medicine, University of Arkansas, Little Rock, Ark. 5th edition. 819 pages. Illus. Cloth. \$10.00. St. Louis: C. V. Mosby Company, 1927.

**HEART DISEASE.** Harold E. B. Pardee, M.D., Assistant Professor of Clinical Medicine, Cornell University. 120 pages. Illus. Cloth, \$1.50. Philadelphia: Lea & Febiger, 1928.

**INTERNATIONAL CLINICS.** Henry W. Cattell, M.D., Editor. Vol. I. 38th Series, 1928. 307 pages. Illus. Philadelphia & London: J. B. Lippincott, 1928.

**THE SPRINGTIME OF PHYSIK, BEING A DIVERTING OUTLINE OF MEDICINE AND SURGERY.** Laurance D. Redway, M.D., Attending Ophthalmologist: Northern Westchester Hospital, Mount Kisco, N. Y.; Westchester County Hospital, New York; Ossining Hospital, Ossining, N. Y.; Tarrytown Hospital, Tarrytown, N. Y.; Sing Sing Prison, Ossining, N. Y.; etc. 68 pages. Cloth, \$2.00. New York: International Journal of Surgery Company, 18 East 41st Street, 1928.

**GYNECOLOGY FOR NURSES.** Harry Sturgeon Crossen, Professor of Clinical Gynecology, Washington University Medical School, etc. With 365 engravings, including one color plate, and 281 pages. St. Louis: C. V. Mosby Company, 1927.

This book differs from the ordinary nursing manual in the number and clearness of its illustrations. Those familiar with the author's book on Diseases of Women and his Operative Gynecology, will recall most of the illustrations in this volume. The illustrations of pathological conditions and of the simpler operative procedures will undoubtedly appeal to the nurse, who, while daily working with such material, rarely has an opportunity to see or understand the procedures at which she is assisting. Unfortunately in setting up the book, there is a duplication of ten pages on the examinations in hospital and home. The author's preface well summarizes the scope of the book.

"Part I presents a brief survey of pelvic anatomy and physiology, of gynecologic diseases, and of the methods employed in gynecologic examination and diagnosis and treatment (operative and non-operative). This is to give the nurse a general understanding of the

structures and pathologic changes, that she may care for the patients intelligently and with added interest and effectiveness that comes from such knowledge."

"Part II presents the details of gynecologic nursing in its various phases—including preparation for and assistance during pelvic examinations, preparation of supplies for operation, and the after-care in abdominal and vaginal operative cases. The endeavor has been, through the contents and arrangement of the text and the free use of illustrations, to present the details of gynecologic nursing in such a way as to be of real help to the physician in securing accurate execution of his orders in the care of these patients, and of real help to nurse supervisors in training their student nurses."

E. C. HARTLEY, M.D.

THE WOMAN A MAN MARRIES. Victor Cox Pederson, M.D. 276 pages. \$3.00. New York: George H. Doran Co., 1927.

This is a book written about women by a man who believes that the failure of many marriages is due to lack of coöperation or of acceptance of the obligations of marriage by the female partner. He thinks this is largely due to ignorance and advocates every woman, before marriage, going to a male physician (female physicians are too much interested in birth control) to have the physiology and biology of sex explained. In order to reach the women who can not or will not, he writes this book which he divides under the heads of ignorance of physiology, of social development, of social conditions, of venereal disease, of marriage, and of relief. Over and over again through the pages one is told that man's infidelity is the result of his wife's coldness or neglect and that men are themselves the victims of a double standard in that women do not accept the obligations of marriage as men do.

Both the lay and medical reader will find it hard to believe that so much ignorance exists among women in these days of frank speech, Freudian discussions and the predominating sex motif in fiction, drama, and cinema. The book will not appeal to the physician, and it is too verbose, historical and unconvincing to recommend to the lay women for whom it was written.

TROUBLES WE DON'T TALK ABOUT. J. F. Montague, M.D. \$2.00. New York: J. B. Lippincott & Co., 1927.

Considering the extremely valuable contributions that have come from this very competent author one is not a little surprised at the latest product of his pen. No doubt the same fascination which scientific and pseudo-scientific matters have for the laymen, and which is evidenced on every side through advertisements of everything from tooth paste to suspenders, will make this an absorbing book.

With the possible exception of the chapters on cancer of the rectum, and the seriousness of bleeding from the rectum, I can not fail to see that this book for laymen, on diseases of the rectum, will do more harm than good. It is obvious that any medium through which the public is led to consult his physician about

existing disease is of material assistance in the effort to promote health and prolong life. Will not such a book keep away just as many in the false security of their own diagnoses?

Of what avail is it to the lay reader to know the mechanics involved in the production of prolapse of the rectum, or why one's blood pressure mounts because of intestinal disease, if such is the case? Also, a discussion of the comparative advantages of the various procedures, as, for instance, the treating of hemorrhoids, can only lead to an erroneous opinion on the part of the patient regarding his own particular condition.

Throughout the book the reader is cautioned against certain types of operations, various methods of examination, particular principles of treatment, which are considered as useless or worse. Certainly, the layman, with his meager store of information, is in no position to evaluate the worth of these procedures.

A quotation from the next to the last chapter is significant of the trend of the book and, if true, the place to apply the remedy in this case is not to the patient but to the doctor.

"A man came suffering with uncomplicated hemorrhoids. The methods of the general surgeon require an operation under ether, a stay of weeks in the hospital, and much pain and discomfort to be suffered. The method of the specialist requires no stay in the hospital, but instead permits the patient to continue his work earning his daily bread. Throughout the treatment he has no pain or harmful symptoms. Even cases which have been neglected so long as to require operation may be painlessly treated with only a few days of rest. Other examples might be given but I am sure the above will suffice. Is specialism worth while? It is."

Finally, the book is cheaply gotten up and presents an unattractive appearance.

HAROLD E. HULLSIEK, M.D.

UROGRAPHY. William F. Braasch, M.D., head of Section of Urology, Mayo Clinic; Professor of Urology, Graduate School of Medicine, University of Minnesota. Second edition, revised and enlarged. 480 pages. Illustrated. Cloth, \$13.00 net. Philadelphia and London: W. B. Saunders Company, 1927.

This monograph is unique in its value. It should be available for reference to all urologists and roentgenologists. It is well worth perusal by all who are interested in the anatomy and pathology of the kidneys. Much of the value of the volume lies in the excellence of its illustrations, there being 759 roentgenograms.

The subject of urography, the roentgenographic portrayal of the urinary tract rendered opaque, is completely discussed. The first chapter on history is followed by one on technic in which are discussed contra-indications, selection of opaque medium, method of injecting medium, the question of bilateral pyelography, technical errors and suggestions, and roentgenographic technic. The other eleven chapters are concerned with the interpretation of the roentgenograms. The first of these considers the normal renal pelvis and ureter, in-

cluding sources of error in urography. This chapter alone has 99 illustrations. The next seven chapters cover abnormalities of the pelvis and ureter: abnormal positions, dilatations from obstruction and from infection, renal and ureteral stones, tumors of various kinds, and congenital anomalies. Differential diagnosis is carefully considered. The other chapters cover cystography, urethrography, and a group of miscellaneous matters. The chapters on renal and ureteral stone cover a hundred pages with 205 illustrations. The chapter on renal tumors covers 51 pages with 83 illustrations. Such a volume, with careful selection and proving of the material, and backed by the extensive observations of the author, is bound to have great value.

T. H. SWEETSER, M.D.

**THE EXTRA-OCULAR MUSCLES:** A clinical study of normal and abnormal ocular motility. Luther C. Peter, A.M., M.D., Sc.D., Professor of Ophthalmology in the Medical Department of Temple University, Professor of Diseases of the Eye in the Graduate School of the University of Pennsylvania, etc., etc. Illustrated with 98 engravings and 5 colored plates. 294 pp. Philadelphia: Lea & Febiger, 1927.

Like so many text-books, this one represents an amplification of the author's lectures to students. It is a very excellent book—covers the subject in a clear and thorough manner. It should be in every ophthalmologist's reference library, as it contains a very complete summary of eye muscle physiology, anatomy, disease and therapy.

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# MINNESOTA MEDICINE

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## MEGACOLON: AN ANALYSIS OF SIXTY-FIVE CASES\*

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and

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THE term megacolon (Greek *μεγας* large; *κολον* colon) applies to any condition of the colon wherein it is larger than normal. A number of terms have been applied to the varieties of chronic enlargement of the colon. Megacolon is another form of the term megacolon. Giant colon has been used as a contraction of the expression gigantism of the colon. In 1886, Hirschsprung applied the term megacolon to a form of large colon of unknown cause occurring in infants, and he distinguished it from pseudomegacolon in which symptoms appeared in adult life and which was considered acquired. In the term congenital idiopathic dilatation of the colon, he included both megacolon and pseudomegacolon. Terry pointed out that the latter term is a misnomer and stated that if megacolon exists in a given case it hardly can be called pseudomegacolon. The term congenital idiopathic dilatation of the colon is used by French, English and American writers, whereas the name Hirschsprung's disease is used by the German and Dutch as a synonym. It has been pointed out by Ladd that the latter is not appropriate, since Hirschsprung did not have priority in the discovery of the condition and furthermore the descriptive term is preferable. Mya of Italy called the same condition megacolon congenitum and accordingly certain Italians call it Mya's disease. On the basis of later conceptions of the etiology of idiopathic megacolon, Hawkins has called it neuropathic dilatation and hypertrophy of the colon.

Inasmuch as megacolon is the logical term for

all types of chronic enlargement of the colon, and since it frequently is used in this sense in the literature, it will likewise be used here.

### HISTORY

Ruysch (quoted by Jayle) in the seventeenth century, described a case of megacolon in a girl aged five years. Finney stated that Parry, in 1825, and Billard, in 1829, reported the earliest cases. Von Ammon, in 1842, reported two cases, that of a fetus of seven months, and that of a child who died soon after birth. Lewitt, in 1867, reported the first case in America. Although twenty or more cases had been reported before that time, the general interest of the medical profession was not aroused to the existence of megacolon until Hirschsprung made his report in 1886. This was followed by reports of many other cases so that in 1908 Finney and Fisher had noted more than 200 articles on the subject. Since 1886 Hirschsprung's name has been closely associated with the subject megacolon. Thus far little progress has been made in determining the etiology of the condition although many hypotheses have been advanced. In 1927, Wade reported the application of sympathetic ramisection in the treatment of megacolon which promises to throw light on the ultimate cause of what is commonly considered idiopathic megacolon.

### CLASSIFICATION

The cases in which an etiologic factor could not be found will be classified here as primary or idiopathic megacolon, and the cases in which demonstrable or questionable etiologic factors are present will be classified as secondary or

\*Read before the Minnesota Academy of Medicine, St. Paul, Minnesota, April 11, 1928.

acquired megacolon. Hirschsprung classified megacolon as: true megacolon which occurs in infants, and pseudomegacolon which occurs in adults. Fitz recognized two varieties of infantile dilatation of the colon: congenital, the result of defect of development in which symptoms appear soon after birth, and idiopathic, in which there is no evidence of arrest of development, and in which symptoms appear within weeks or months after birth. Drueck distinguished three types: that in which symptoms appear at birth or shortly after (true megacolon), that in which symptoms develop about the end of the first year of life corresponding to the time of weaning, and that in which symptoms appear in adults (pseudomegacolon). For our purpose in this paper a simple classification will suffice: primary or idiopathic megacolon, in which there is no demonstrable etiologic factor, and secondary or acquired megacolon, in which there is demonstrable or possible obstruction.

#### ETIOLOGY

Except in the cases in which definite anatomic obstruction is demonstrable in the bowel, the cause of megacolon is unknown. As pointed out by Aschoff, varying degrees of dilatation and hypertrophy are manifest proximally to segments in which chronic obstruction of any portion of the alimentary canal gradually develops; this is commonly seen in malignant or benign stricture of the colon. In another type of megacolon, however, definite anatomic obstruction is not demonstrable and in this type the cause is obscure, as has been emphasized in various hypotheses concerning this type of megacolon. On the basis of Barrington-Ward's grouping we have arranged the most historically important hypotheses as follows:

##### A. Mechanical

1. Abnormal length of mesentery with torsion of sigmoid (Barth, 1870).
2. Abnormal length of sigmoid with formation of loops and kinks (Marfan, 1895).
3. Obstruction in terminal bowel (Treves, 1898; David, 1923).
4. Aplasia of muscularis of a segment of bowel (Concetti, 1899).
5. Formation of valves in mucosa (Perthes, 1905).
6. Abnormal distention of colon by meco-

nium and lack of compensation for distention by hypertrophied musculature (Wilkie, 1909).

##### B. Inflammatory

1. Chronic colitis (Walker and Griffiths, 1893).

##### C. Hypernutrition

1. Lymphangiectasis resulting in gigantism as in macroglossia and macrocheilia (Finney, 1908).

##### D. Congenital

1. Congenital anomalous dilatation and hypertrophy of colon (Hirschsprung, 1886).
2. Congenital dilatation, secondary hypertrophy (Mya, 1894).
3. Congenital hypertrophy, secondary dilatation (Fenwick, 1900).
4. Congenital defect neuropathic or mechanical (Bailey, 1914).

##### E. Neuropathic

1. Neuromuscular defect in a segment of bowel (Formad, 1892; Hawkins, 1907).
2. Paralysis of a segment of intestine (Pennato, 1902).
3. Lesion of the sympathetic nervous system (Bing, 1906).
4. Reflex spasm of sphincters secondary to anal fissure (Fenwick, 1900).
5. Failure of coördination of impulses to segment of bowel (Mayo, W. J., 1917).
6. Achalasia of pelvirectal flexure (Hurst, 1924).
7. Delay in acquisition of inhibition combined perhaps with achalasia (Fraser, 1926).
8. Overaction of sympathetic nervous system with fixation of plastic tone (Royle, 1927).

##### F. Other causes

1. Secondary to diastasis recti (Levi, 1903).
2. Defective muscular tone secondary to structure or nervous defect (Murray, 1903).
3. Atony associated with wasting disease (Griffith, 1899).

The theory with regard to inflammation may be discarded as untenable. There appears to be only one proponent of the theory of hypernutrition. In a number of cases more or less definite obstruction has been found, but whether it was sufficient to produce the severe symptoms has

been questioned. The theory of congenital origin while it does not explain the ultimate cause is supported by several facts: megacolon has been reported in fetuses of seven months by von Ammon and Konjetzny; abdominal distention associated with ectasia, dilatation or hypertrophy of the colon in the newborn infant has been observed. Finney does not accept the theory of

Idiopathic megacolon is most common in infancy or early childhood. In children and in most adults in whom it has been observed the symptoms have been present from birth or early life. In a few cases symptoms do not manifest themselves until adult life, and in rare cases not until advanced age.

It has been observed that more males than



Fig. 1. Patient with megacolon.



Fig. 2. Barium-filled megacolon.

neuropathic origin because in his case he was unable to demonstrate histologic change in the nerve plexuses. He stated that the hypertrophy of the muscularis and the powerful peristaltic contractions disprove the theory. Although there may not as yet be any anatomic evidence for the neuropathic theory, in recent years a gradual tendency has been noted toward its general acceptance. Ladd pointed out that the diminished tendency to shock in radical operations in primary megacolon is additional evidence of its neuropathic origin. The favorable response to sympathetic ramisection and ramisectomy in the cases reported apparently is further evidence.

females are affected. In Lowenstein's series of 112 cases, the proportion of males to females was 3.5 : 1. A tendency to the disease in families is indicated by the observation of cases in twins by Popper, and in members of the same family by Welt-Kakels, Machell and Finney. A considerable number of cases have been observed in mentally defective persons, and other congenital defects are often associated.

#### PATHOLOGY

The pathogenesis of acquired megacolon is secondary to obstruction. In the idiopathic type obstruction or other anatomic cause is not demonstrable.

The morbid anatomy of the bowel essentially is enlargement of the affected portion, usually with hypertrophy of the walls and sometimes with elongation. The sigmoid is the region most commonly affected, and the entire large intestine,

exclusive of the rectum, is the next most common. According to Finney, the sigmoid is included in the process alone or with other portions of the colon in more than 80 per cent of the cases. The rectum is involved in a few cases, and rarely the appendix, small intestine, stomach and esophagus.

On gross examination the enlargement of the diameter of the bowel, the thickening of the walls and the elongation independently or in combination are manifest. Colons 70 cm. in circumference have been described. Usually the haustral markings and the longitudinal bands are obliterated. The transition from normal bowel above to involved bowel below usually is gradual, but may be abrupt, whereas the transition from affected colon above to normal colon below usually is abrupt. The capacity of the colon often is striking. In Formad's case 40 pounds of feces were removed and in Peacock's 15 quarts of liquid. The mucosa is frequently pigmented as in the case reported by Finney and stercoral ulcers occasionally are present. The feces usually are of the consistence of putty, foul, and contain fatty acids and phosphates.

Microscopically one or all the coats of the bowel are thickened, usually more pronounced in the muscularis. The blood vessels and lymphatics are increased in size and usually there is round-cell infiltration in one or all coats.

Associated pathologic changes occasionally include the effects of pressure on thoracic viscera, abdominal viscera and walls, hydronephrosis, edema and hernia. Death has resulted in a number of instances from rupture of the bowel and from pulmonary embolism.

#### SYMPTOMS

The symptoms of megacolon are characteristic and striking. The two cardinal features are obstinate constipation and distention of the abdomen. In typical cases these symptoms appear during the first days or weeks of life and persist with brief periods of remission throughout life. In some cases pronounced symptoms do not appear until later in childhood or in adult life and in rare cases not until late in life. The most striking feature is the extraordinary infrequency of bowel movements in the absence of the features of acute obstruction. Patients may not defecate for a period of three or four weeks and in certain cases, as in the case reported by Gay,

periods of three months are said to have elapsed between evacuations of the bowels. Ordinarily bowel movements are induced with great difficulty; large doses of drastic cathartics may be taken without effect. The stools are often large, inspissated and their odor offensive. Unusual attitudes may be assumed during defecation, as leaning over a chair, or the knee-chest position.



Fig. 3. Sigmoid removed at operation. Hypertrophy of wall and mesentery is shown.

At intervals there may be diarrhea or vomiting. Ladd has called attention to the fact that patients may pass liquid stools daily and yet retain feces. Abdominal distention may be present at birth to such degree as to interfere with delivery, as in cases reported by Hobbs and de Richemond. Ordinarily this symptom is noted within the first few days or weeks of life. It is caused by dis-

tention of the colon with feces and gas and it varies indirectly with the activity of the bowels. It may be uniform and general, or localized, corresponding to the position or content of the affected portion of the bowel. Corresponding areas of movable dullness and tympany may be elicited.

Secondary symptoms often associated include wide costal angle, thin abdominal wall, diastasis recti, hernia distention of superficial abdominal vessels, displacement of thoracic viscera, dyspnea, cardiac embarrassment, audible borborygmus, visible sluggish peristalsis, edema of the extremities, and impaired nutrition.

#### DIAGNOSIS

The diagnosis of megacolon may be made on a history of unusually obstinate constipation and abdominal distention in a patient otherwise apparently in good health, and confirmed by fluoroscopic examination with the use of the opaque enema; this may reveal large fecaliths in the lumen of the bowel, as in the case reported by Sutherland.

Megacolon must be distinguished from acute intestinal obstruction, tuberculous peritonitis, ovarian cyst, and rickets.

#### PROGNOSIS

The prognosis in any given case is uncertain. In infants, malnutrition and acute infections are the chief complications. Some infants withstand the condition well. In the mild cases acute toxic or obstructive symptoms may supervene and cause death. Perforation of the bowel has been reported by Lewitt, and death from pulmonary embolism during defecation was reported by Cookson.

Surgical treatment offers the best chance for cure. Estimates of cures by surgical treatment vary from 32 to 90 per cent as compared with that of medical treatment which vary from 1.5 to 25 per cent. The statistics of mortality following surgical treatment vary from 26 to 48 per cent as compared with those following medical treatment varying from 52 to 74 per cent. Finney concluded that the mortality following surgical treatment is two-thirds that following medical treatment, and the percentage of recovery three times that following medical treatment.

#### TREATMENT

There seems to be no successful prophylaxis against megacolon although progress may be checked by early and judicious treatment. In ad-



Fig. 4. Section from Figure 3, showing hypertrophy (X7).



Fig. 5. Section from normal colon (X7).

dition to the fact that a practical cure may be obtained in a few cases by means of medical treatment, it is also of distinct value at certain stages of the disease and also in the preparation of patients for operation. In very young infants or in undernourished subjects, operative procedures are not well borne, and dietary and hygienic measures must be relied on. As pointed out by Rankin, before any surgical procedure is

applied directly to the colon, preliminary emptying of the bowel is of paramount importance.

If patients are undernourished, the establishment of hygienic measures is desirable. The diet should be nutritious and easily tolerated. For these requirements, carbohydrates and foods with adequate vitamin content are desirable. In some cases, however, increased formation of gas is noted following diets rich in carbohydrates. Certain authors advise restriction of animal protein as prophylaxis against intestinal intoxication. Lactic acid milk is often of distinct value. On the other hand, a diet high in residue may be found to promote peristalsis. Before operation, however, a diet low in residue is required. Physical measures such as exercise, massage, the wearing of an abdominal support, electricity in its various forms, enemas, the use of the rectal tube and rectal instillations of oil are all of value. The drugs which may be of use include mineral oil, laxatives, tonics including arsenic and iron, dilute hydrochloric acid, cod liver oil, and the physiologic drugs, as atropine, pituitrin and thyroxin.

The indications for surgical treatment are given by Terry as the presence of definite obstruction, and the failure of medical treatment. According to Rankin, the selection of a surgical procedure is determined by the chronicity of the condition and the presence or absence of superimposed acute obstruction. In the presence of acute obstruction, drainage is indicated, and may be accomplished by ileostomy, cecostomy or colostomy, removal of the obstruction being a secondary consideration. In cases of chronic obstruction removal of the obstruction by appropriate means is indicated. In a few of the so-called spasmodic cases or cases of partial obstruction, dilatation or division of the sphincters, or a stricture, if present, has given apparent good results. In the idiopathic type of cases many procedures have been employed. Among the earlier palliative measures used were intestinal puncture, colotomy, colopexy, coloplasty and plication of the colon which did not afford definite results. Enterostomy, appendicostomy and colostomy are of distinct aid in emergency drainage, preliminary to resection, or for the purpose of through-and-through irrigation of the affected bowel. Of the more radical procedures, Mirizzi recommends total colectomy on the basis of recurrence in 25 per cent of his cases. Exclusion

of the colon by ileosigmoidostomy is strongly advocated by certain observers, but this procedure alone does not prevent reaccumulation of feces in the excluded loop. To overcome this objection, Sistrunk recommends section of the sigmoid above the anastomosis and utilization of the proximal stump for colostomy, with colectomy later if desirable. Rankin recommends exteriorization by the Mikulicz method when possible, but otherwise prefers intraperitoneal resection using the aseptic basting stitch, a method described by Kerr.

The most recent development in the surgical treatment of idiopathic megacolon is the application of lumbar sympathetic ganglionectomy and ramisectomy. This procedure is based on the observation by Royle that in a series of thirteen cases in which bilateral ramisectomy was performed for spastic paralysis of the extremities, constipation which was present in all was relieved in eleven. He believes that in idiopathic megacolon, as in spastic paralysis, excessive action of the sympathetic nervous system fixes any posture which is imposed which in megacolon is the distention imposed by the accumulation of feces (Figs. 1 to 5).

#### ANALYSIS OF SIXTY-FIVE CASES

Between January 1, 1908, and January 1, 1928, sixty-five cases of megacolon were observed at the Mayo Clinic. Of this number, eight were the so-called pseudomegacolon or secondary type, and fifty-seven were idiopathic.

The cases of secondary megacolon are of interest for comparative purposes. Two of the eight patients were males and six were females, representing a proportion of 1 : 3. This is the reverse of the sex incidence in the idiopathic type. The ages of the eight patients with pseudomegacolon ranged from fourteen to fifty-one years, only one patient being less than twenty. These correspond to Hirschsprung's classification of pseudomegacolon which he defined as megacolon occurring in adults. Constipation was the chief complaint in six of the cases and the duration ranged from one year to fifteen years. Abdominal distention was observed in six cases. Palpable abdominal tumor and impairment of nutrition each were noted in one case. The roentgen-ray examination of the colon was positive in four cases and negative in one case. Surgical treatment was required in seven cases and med-

ical treatment was employed in one case. The obstructive factors recorded in six cases included adhesions, volvulus, fecalith, polyp, cyst of the sacrum and fibromyoma of the uterus. The first and second stages of the Mikulicz operation were employed in two cases, and colocolostomy, appendicostomy, subtotal abdominal hysterectomy, aspiration of cyst and appendectomy each in one case. Two patients died, one two days and one nine days after a Mikulicz operation. One patient died from an unknown cause eight years after colocolostomy. Three patients were cured by operation and one was improved. We were unable to communicate with the patient who had received medical treatment.

There are fifty-seven cases of idiopathic megacolon in the series. Forty-two occurred in males, and fifteen in females, representing a proportion of 2.8 : 1. The ages ranged from one month to fifty-seven years. Seven patients were aged one year or less, twenty-five were between one year and twelve years and two were between twelve and twenty years. Fourteen were in the third decade, four in the fourth, three in the fifth, and two in the sixth; thus there were thirty-two children and twenty-five adults. Two patients were brothers. Other congenital anomalies were associated with megacolon in nine cases. Imperforate anus was present in one case, imperforate anus associated with rectovaginal fistula in two cases, and imperforate anus and rectovaginal fistula associated with bicornute uterus in two cases. In all of these five cases the imperforate anus had been operated on previously but megacolon persisted in spite of the fact that obstruction was relieved and in one case incontinence of feces was complained of. It is possible that the imperforate anus and other congenital deformities of the anal canal were the etiologic factor in the production of the dilatation of the colon in these five cases. Relief of the obstruction did not cure the megacolon; nevertheless it is questionable whether these five cases should be included in the group of cases of typical primary megacolon. Undescended testicle was present in one case, polydactylism of the hands and feet in one case, and inguinal hernia in two cases.

Constipation was present in forty-six of the fifty-seven cases, absent in six, and not recorded in five. Constipation had existed from birth in twenty-one of the forty-six cases, from infancy

in nine, from childhood in seven, and in adult life in three. The time of onset of constipation was not recorded in six cases. The history of infrequency of bowel movements was stressed in thirteen cases; in twelve of these the longest period between bowel movements varied from five to seventy-two days with an average of twenty days. The shortest period varied from one to six days, with an average of two days. One patient, a girl aged twenty-one, stated that she had gone as long as nine months without defecating but that ordinarily bowel action occurred from one to three months. In a few of the cases diarrhea had been present at intervals, and incontinence of feces was complained of in three cases. The latter was associated with urinary incontinence in one case. One of these patients had an imperforate anus, one had had colectomy performed elsewhere, and in the other anatomic basis for the incontinence was not found. Exceptionally large stools were mentioned in two cases. In one case, 14 pounds of feces were removed at operation.

Abdominal enlargement was present in forty-seven cases, absent in three and not recorded in seven. The time of onset was not stated in forty-five cases but distention had existed since infancy in three, from childhood in three and since adult life in two; in the last two it had existed for two and four years respectively. In most instances distention was general and uniform; in many, however, it was more pronounced in one region of the abdomen. In a few cases the outline of the colon was visible; in many it was palpable, and movable fecal masses were felt in several. Visible peristalsis was recorded in three cases. Mention of associated features secondary to distention was made in twelve cases and included wide costal angles in five cases, distended abdominal veins in three, displacement of the heart and diaphragm each in two, and free fluid in the peritoneal cavity in one case. Impaired nutrition was recorded in seven cases.

The pathologic features mentioned in the thirty operative cases included dilatation of the colon, hypertrophy of the bowel wall, and elongation of the large intestine, all in varying degrees. In the twenty-five cases in which the pathologic characteristics especially were mentioned, the site of the involvement included the sigmoid alone in one case; inclusion of the sigmoid and other portions of the colon in the involvement

was noted in twenty-two cases, involvement of the descending colon in thirteen, of the transverse colon in eleven, of the entire colon in six, of the rectum in four, the cecum in four, the ascending colon in two, and the mesentery of the sigmoid in two. In one case in which the sigmoid was greatly dilated, carcinoma of the transverse colon was found. In one case, that of a woman aged forty-seven, symptoms of disease of the colon had not been noted, yet during an operation for gastric ulcer typical idiopathic megacolon was found.

In forty-three cases in which roentgen-ray examination of the colon was made, the data were positive in forty-two. In one case, for an unexplained reason, the data were negative. At operation in this case it was found that the affected portion of the colon was dilated to a diameter of 15 cm. In one case 3 liters of opaque enema were required to fill the left half of the colon.

In twenty-seven of the fifty-seven cases of idiopathic megacolon, medical treatment was carried out, and in thirty surgical treatment. In five of the twenty-seven medical cases surgical treatment was advised, and in one additional recent case, the patient was asked to return in one year for surgical intervention. The records of results of medical treatment are available in sixteen of the twenty-seven cases; nine did not reply to follow-up letters. One patient did not cooperate for treatment, and one will return for operation. Of the sixteen patients whose follow-up records are complete, thirteen are improved; three subsequently have died.

In the thirty surgical cases several types of operation were employed. In seven cases appendicostomy or cecostomy was performed to facilitate thorough-and-through irrigation of the colon. In five of these patients whose follow-up records are complete, one is cured several years after closure of the appendicostomy opening, one improved after irrigations, one died from intoxication following operation, and two died at periods of several months after operation from unknown causes. Short-circuiting procedures were employed in six cases; this included ileostomy in one case, and ileosigmoidostomy with exclusion of the affected colon in five cases. Records are complete of five of these patients. Two are cured eight and thirteen years after operation, one is improved, and two died of postoperative complications. In fourteen cases radical resec-

tion of the affected colon was performed. Complete records were made in thirteen. Eight patients are cured from six to eighteen years after operation, one has not improved, and three died postoperatively of surgical complications and one of an acute exanthem. The Mikulicz operation was employed in eight cases. Total colectomy was employed in three cases and anterior partial resection in three. In one of the earliest cases fecal impaction was broken up intraperitoneally; this was followed by improvement. In two of the most recent cases lumbar sympathetic ganglionectomy and ramisectomy was performed with entirely satisfactory results.

To summarize the results of surgical treatment in the twenty-six cases in which the records are complete, thirteen (50 per cent) of the patients are cured, three (11.5 per cent) are improved and a like number are not improved. In other words, 61.5 per cent of the patients treated surgically, and traced, were cured or improved and of the thirty patients operated on seven (23.3 per cent) died following operation. The sixteen patients treated medically and traced can not be considered anatomically cured but 81 per cent are improved. The mortality was 19 per cent. In this connection it should be noted that in the group of patients treated medically only one patient was less than one year of age, which is the most critical period of life, whereas in the group treated surgically there were six.

From this analysis it would appear that a certain proportion of these patients can be made comfortable by conservative methods. Symptomatically much can be accomplished by proper regulation of the diet. Certain patients will be comfortable if the colon is irrigated once a day, and they may prefer to continue in this way.

Until recently the best results have been obtained by radical operation but the risk has been high. The surgical mortality in this series of cases of 23.3 per cent compares favorably with that of other reported series.

In a personal communication from Dr. Norman D. Royal we learned of the satisfactory results following sympathetic ganglionectomy and ramisectomy in four cases and in view of the rather high risk of radical operation on the colon it seemed plausible to try this procedure.

Adson has performed sympathetic ganglionectomy and ramisectomy in two cases of megacolon, apparently with decided benefit. In both

cases before operation it had been necessary to flush the colon daily, and then the patients were not comfortable. Within two weeks after operation these patients were able to evacuate the bowels without enemas or laxatives. One patient has remained well for ten months since operation and the other for four months. In one of the cases the second, third and fourth lumbar sympathetic ganglia were removed with their adjoining and communicating nerves from the left side only, but in the other case in which the entire colon was involved these ganglia and nerves were removed from both sides.

The mother of the boy operated on ten months ago recently reported that the bowels are moving normally without enemas or laxatives. In this case a roentgenogram of the colon has not been made since the operation. In the second case in which operation had been performed four months ago, the child had had one enema in the interval since the operation and the rest of the time his bowels have moved normally. A recent complete examination was made. We found the abdominal distention to be markedly reduced, although still apparent, however. Roentgenograms not only showed the reduced size of the colon but the peristaltic contractions.

We believe that the results of sympathectomy in these cases justify the operation in others. If it fails, the more serious and more radical procedure, removal of the colon, can still be carried out.

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### THE CUNNINGHAM "TANK TREATMENT"

Dr. Orval J. Cunningham of Kansas City, Mo., has been treating certain pathologic conditions by means of compressed air over a period of some years. In Kansas City he has constructed a cylindrical tank about ten feet in diameter and nearly ninety feet in length. The tank is said to be equipped with air lock, toilets, shower baths, compartments, and Pullman car equipment. Newspapers report that a tank is to be constructed in Cleveland. Advertising for a concern that was to operate the Cunningham "treatment" in California declared, "it now appears positively proven that syphilis, pernicious anemia and diabetes are curable by this method. . . ." Dr. Cunningham's thesis is that diabetes mellitus, pernicious anemia, syphilis, hypertrophic arthritis and carcinoma are all due to bacteria of an anaerobic type. He holds, further, that the oxygen content of the tissues is greatly increased when the patients are put in his compressed-air tank and that the compressed air treatment is curative in certain cases of diabetes mellitus, pernicious anemia, hypertrophic arthritis, syphilis and carcinoma. The status of the "tank treatment" is obvious; Dr. Cunningham claims unusual results for his treatment but has published no case reports nor furnished the medical profession with any evidence to support the claims. His thesis is altogether without proof. (*Jour. A. M. A.*, May 5, 1928, p. 1494.)

### ETHYLENE-CHENEY

The A. M. A. Chemical Laboratory publishes a further report of specimens of ethylene for anesthesia examined for the Council on Pharmacy and Chemistry. Its previous reports concerned the products of the Ohio Chemical and Manufacturing Co., Kansas City Oxygen Gas Co. and Certified Laboratory Products Co. These products were found of good quality and have been accepted for New and Non-official Remedies. The present report is on the ethylene for anesthesia of The Cheney Chemical Co., Cleveland, Ohio. The first specimens were found to contain some acetylene. When the Laboratory's findings were sent to the manufacturer, the firm took steps to supply a product which should be free from acetylene and submitted a specimen that was free from acetylene and complied with the New and Non-official Remedies standards for ethylene for anesthesia. (*Jour. A. M. A.*, May 5, 1928, p. 1444.)

### EXPLOSIONS OF ETHYLENE

Several ethylene explosions have been reported but only two have been fatal. The greater number of explosions have been due to electrostatic conditions and have occurred during the winter months. Ethylene is an inflammable gas and should not be used in the presence of a cautery, open flame, or any electrical apparatus capable of producing a spark from any cause. (*Jour. A. M. A.*, May 19, 1928, p. 1650.)

## ANURIA\*

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A BETTER comprehension of the many causes of anuria has reawakened interest in a subject which is not only of importance to the urologist but to those in nearly every other field of medicine. Concomitant with the more intensive study of the question, there has been a marked improvement in the early diagnosis of the variety of anuria and a corresponding decrease of the previous high mortality rate.

Some years ago a patient was admitted to our service at the Michael Reese Hospital in a state of coma. Repeated catheterization failed to reveal the presence of more than a few drops of bloody urine in the bladder. He died within forty-eight hours after admission. At autopsy the condition shown in Figure 1, and E of Figure 2, was found. There was a complete blocking of the ureter of the right kidney by a calculus situated about midway between the bladder and kidney. The opposite organ was the seat of a congenital lack of development, *i.e.*, a hypoplasia, so that it was unable to do the work of both kidneys when its mate was obstructed by the ureteral calculus.

This case impressed upon me the necessity of a search for a possible obstruction or a lack of development or even congenital absence of the opposite kidney in every case of either oliguria<sup>1</sup> or anuria.

Shortly afterwards a patient was seen in consultation with almost complete anuria and some of the symptoms of incomplete tolerance to be mentioned later. There was a history of a fall into the cold water of a neighboring lake, followed by anuria.

No obstruction was encountered in either ureter and radiography failed to reveal a shadow. Ureteral catheterization, however, was followed by immediate recession of the symptoms and an abundant output of urine. At a later urologic study, a congenital lack of development<sup>2</sup> of one kidney was found on pyelographic examination and confirmed by functional tests. This case was

probably of the secretory type to be mentioned shortly, yet was relieved by ureteral catheterization.

Profiting by these observations, we determined to give every case of anuria in which there was an absence of a history such as bichloride poisoning, the benefit of immediate ureteral catheterization even in the presence of negative radiographic findings.

A third case was admitted a few months later with the history of left-sided colicky pain similar to that seen in renal and ureteral calculi. Almost immediately after the onset of the pain there was complete anuria and recurrent emesis. Catheterization of the bladder revealed only a few drops of bloody urine. Radiography for a possible calculus was negative. On cystoscopic examination only a left ureteral orifice was found. An obstruction about 4 cm. above the bladder was encountered in the left ureter. A ureteral catheter was passed with some difficulty beyond the obstruction. The continuous flow of urine from the corresponding renal pelvis soon confirmed our opinion that we were dealing with an obstructive type of anuria in an individual with a congenital solitary kidney. Although temporary relief followed the ureteral catheterization, a ureterotomy above the point of obstruction was necessary a few days later. The cause of the obstruction was found to be a stricture close to the bladder in the left ureter. Recovery followed the operative procedure.

Since encountering these three cases, we have urged our colleagues and those with whom cases of oliguria or anuria have been seen in consultation, to keep in mind the fact that the majority of anurias are due to some form of obstruction at the outlet of the renal pelvis or distal to it and to have a urologic examination made at the earliest possible moment. As a result of this advice, a fairly large number of cases have been seen during the past five years, both in our service and in consultation. We have been more and more impressed with the necessity of a urologic study being carried out at the earliest possible moment.

\*Read before the Hennepin County Medical Society, Minneapolis, Minnesota, Feb. 29, 1928.

<sup>1</sup>The term oliguria is employed to describe a very marked decrease in the urinary output.

<sup>2</sup>This case was reported in the Jour. A. M. A.

Two cases seen in consultation during the past six months have been especially impressive. In one case, a man of 60 was seen on the eleventh day of an anuria. Because radiography<sup>3</sup> for calculus was negative, an obstructive anuria had been excluded. Ureteral catheterization quickly revealed a complete block of the left ureter but operative measures were of no avail because of the fact that the patient was passing out of the period of tolerance<sup>4</sup> into that of uremia. In the second case, there was also an absence of a history of colicky or other type of pain pointing to some form of ureteral obstruction. For this reason ureteral catheterization had not been deemed necessary. The patient was seen on the ninth day of the anuria. An hour or so before being seen by me, there had been a sudden return of urinary secretion. Urologic study consisted simply of cystoscopy because lying on the floor of the bladder was a typical uric acid calculus which had evidently just been expelled spontaneously from the edematous right ureteral orifice. In this last case, there was unquestionably a reflex inhibition of secretion of the opposite nonobstructed kidney.

It is essential to approach every case of anuria without too fixed an opinion as to its cause. It is true that, with a history of bichloride poisoning or a similar self-evident cause, one would not think of anything but an anuria of the type termed secretory (see below). These cases are in the minority clinically and it is to direct attention to the necessity of keeping in mind the fact that the majority of anurias are of obstructive origin, that this paper has been written.

We have found the following division of anuria to be a simple one:

A. *Obstructive (also termed excretory or post-renal).*

(a) Unilateral block by calculus, stricture, injury<sup>5</sup> or neoplasm with normal opposite kidney. The anuria in such cases is best explained by reflex (H of Fig. 2) inhibition of the secretory activity of the opposite organ. We thus have a combination of obstructive and secretory anuria.

(b) Unilateral block by calculus, stricture, injury<sup>5</sup> or neoplasm with congenital absence (D

of Fig. 2), lack of development (E of Fig. 2), complete loss of function as the result of disease or injury and finally absence of the opposite kidney as the result of previous operation (C of Fig. 2).

(c) Bilateral block by calculus (F and G of Fig. 2), or stricture.

B. *Secretory anuria (this includes prerenal and renal causes).*

1. Disturbances of circulation proximal to the kidney itself (prerenal). (a) Vascular spasm of the main renal vessels, probably as the result of stimulation of the splanchnic nerves (see treatment). (Fig. 2, A.)

(b) Anuria as a symptom of hysteria due to the same cause as mentioned under (a).

(c) Reflex inhibition of secretion as the result of peripheral irritation. In this subdivision would be included the cases of anuria following cessation of secretion after passage of urethral instruments (urethrorrenal reflex), after sudden evacuation of the bladder (vesicorenal reflex), during or after ureteral catheterization (ureterorenal reflex) and similar forms of peripheral irritation. A glance at Figure 2 leads one to realize the intimate relation not only of the different portions of the urinary tract to each other but also of the abdominal viscera to the kidneys so far as their nerve supply is concerned.

(d) Embolism or thrombosis of the main renal vessels of both sides or of one side with reflex irritation of the opposite kidney. (Fig. 2, B.)

(e) A marked decrease in blood pressure as often seen in shock.

(f) Dehydration due to loss of large quantities as seen in cholera, severe hemorrhage, intestinal obstruction with repeated emesis, severe diarrheas (not due to cholera) and advanced cardiac decompensation.

2. Disturbances affecting the renal parenchyma (renal causes). In this division may be placed anuria complicating the various types of nephritis and nephrosis such as anuria after scarlatina, bichloride and similar chemical nephroses, the anuria observed in pregnancy, after gallbladder operations and after removal of a kidney. In the last named form of anuria, the parenchymal changes in the remaining kidney

<sup>3</sup>Radiography as a means of diagnosis of calculus both renal and ureteral is negative in about 15 per cent of cases. The calculi after removal from this patient yielded only a faint shadow when placed directly upon an x-ray film.

<sup>4</sup>The meaning of this term is referred to under Symptoms.

<sup>5</sup>Under injury are included not only those due to non-penetrating (subparietal) or penetrating force, but also following gynecologic operations or ureterotomy for the removal of calculus.

have either been overlooked or underestimated.

Either the first or the second step of prostatectomy may be followed by anuria. The majority of these are due to renal parenchymal changes but a certain proportion can no doubt be best explained by the peripheral irritation theory previously described.

numerable renal tubules by hemoglobin crystals and a resultant interference with the secretory activity of the renal parenchyma.

#### SYMPTOMS AND DIAGNOSIS OF ANURIA

Cases of anuria present clinically under the following pictures:

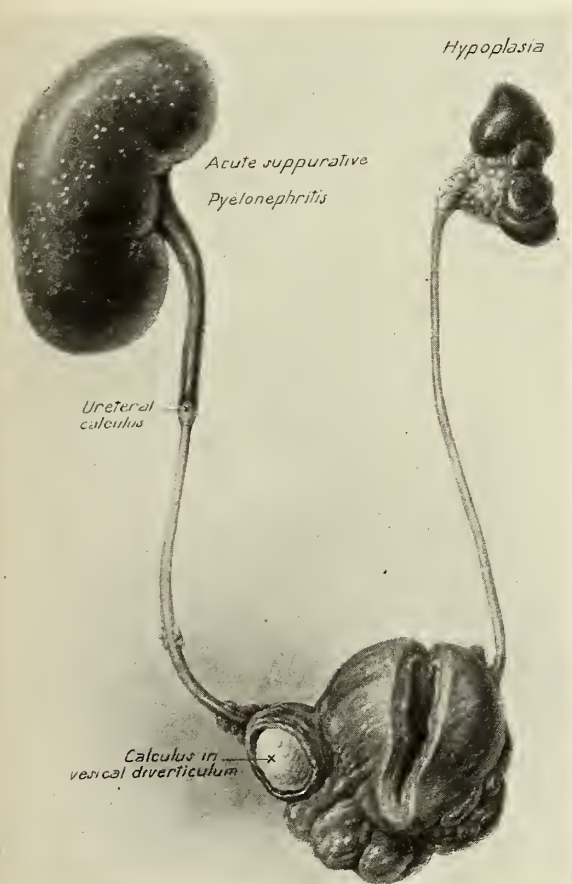


Fig. 1. Conditions found at autopsy of male, aged 40, who entered hospital comatose and died after 48 hours of complete anuria. Note how a calculus blocks right ureter. The opposite (left) kidney had never developed (hypoplasia) and was unable to carry on the work of both kidneys. A large calculus was also found in a vesical diverticulum close to right ureter.

Anuria is comparatively rare in bilateral tuberculosis, neoplasms and polycystic disease. The patients usually die of uremia without a preceding anuria.

C. *Transition or combination group of anurias.*—In this group may be placed<sup>6</sup> cases of anuria following transfusion, burns, gas bacillus infection, potassium chlorate poisoning and black-water fever from malaria. There is an obstructive factor in the form of blocking of in-

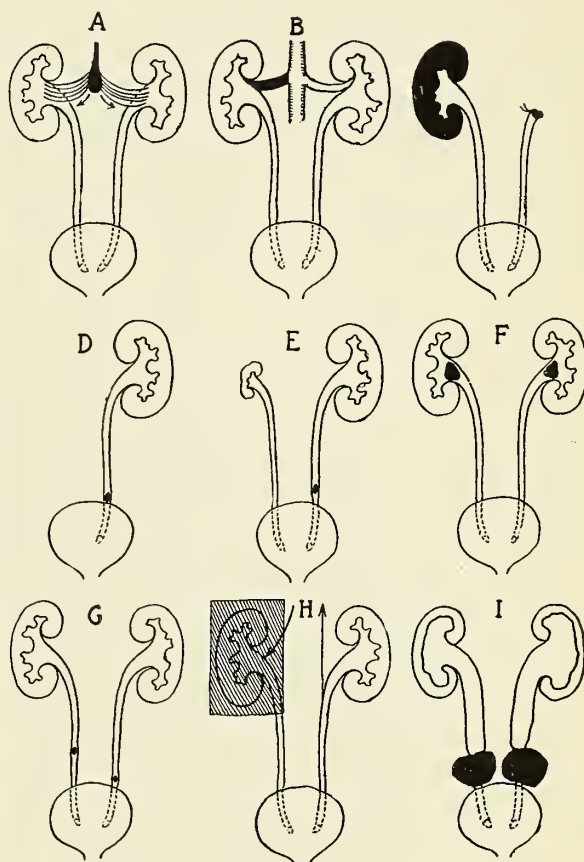


Fig. 2. Diagrams of causes of anuria. A. Inhibition of renal secretion through its nerve supply as result of central or peripheral (urethral or ureteral catheterization, injury, etc.) irritation. B. Obstruction of vessels by thrombosis with reflex inhibition of opposite kidney. C. Disease, neoplasm, etc., of remaining kidney when opposite organ has been removed. D. Blocking of ureter of congenital solitary kidney. E. Ureter of normally developed kidney is blocked and opposite one unable to do the work of both because of hypoplasia. F. Occlusion of both renal pelvises or ureters by calculi, etc. G. Block of normal ureter or renal pelvis with reflex inhibition of opposite normal kidney. H. Bilateral block by extrinsic neoplasm (uterus, bladder or prostate).

1. Those in which aside from the anuria there is a complete absence of any symptoms until the period of tolerance has been passed.

2. Those which present only minor degrees of intolerance (incomplete tolerance stage).

3. Those in which the period of tolerance is very short (twenty-four to forty-eight hours).

By period of tolerance is meant the interval between the time when the anuria is first noticed

<sup>6</sup>Rubritius (Zeitschr. Urol. Chir. 23, 338, 1927) is the first to place these cases in a separate group.

and the appearance of symptoms of uremia. This latter is usually spoken of as the period of intolerance. During the period of complete tolerance there is an absence of symptoms of intoxication (by retained waste products in the blood and tissues) of the central nervous system. The patient appears to be enjoying excellent health and it is only the anuria which attracts attention. In some cases this period of tolerance may last only for twenty-four hours; in the majority, however, it is of longer duration. W. A. Myers<sup>7</sup> collected nineteen cases in which the period of tolerance was from twenty to twenty-nine days and added a personal case in which it was thirty days following a malignant (primary uterine) obstruction of both ureters.

In many cases there are symptoms of a minor degree of intolerance in the form of: (a) occasional or more frequent hiccough; (b) nausea and vomiting; (c) slight muscular twitching; and (d) drowsiness, a feeling fatigue and muscular weakness. These must be looked upon as warning signals of the advent of the period of complete intolerance. In the latter the two outstanding features are coma and convulsions. They do not differ from those observed in cases of uremia without such a preliminary period of tolerance and anuria.

The diagnosis of the cause of the anuria is not difficult in cases where: (a) there has been a previous nephritis; (b) a history of poisoning, *e.g.*, bichloride; (c) where the anuria follows a gynecological operation, *e.g.*, hysterectomy; (d) in cases in which a diagnosis of uni- or bilateral renal or ureteral calculi has been made prior to the onset of the anuria; (e) where one kidney has been removed because of calculus infection, tuberculosis or neoplasm; (f) where there is a history of or still existent evidences of a malignancy of the uterus, bladder or prostate; and (h) history of marked dehydration, transfusion or other cause of hemolysis.

Rubritius<sup>8</sup> collected 900 cases of anuria and found that in 355 the anuria was of the obstructive type and due to calculi. His analysis of these 355 cases is of interest in relation to the question of urologic examination, to be considered next. The cases were divided as follows:

*Bilateral calculi* ..... 88 cases or 24.8%

### *Unilateral calculi*

- (a) Opposite kidney diseased ..... 44 cases or 12.4%
- (b) Condition of opposite kidney unknown ..... 53 cases or 14.9%
- (c) Opposite kidney absent<sup>9</sup> ..... 113 cases or 31.8%
- (d) Reflex inhibition of opposite kidney ..... 57 cases or 16.1%

### THE IMPORTANCE OF A UROLOGIC EXAMINATION

This should be carried out as soon as possible after the diagnosis of oliguria or of anuria has been made in order to exclude the presence of an obstruction due to a calculus or stricture of the ureter. The chief object of this paper is to make a plea that the earlier this is done, the smaller will be the percentage of cases allowed to go so close to the end of the period of tolerance that relief comes too late.

Such a urologic examination can only be made by one who is trained in cystoscopy and ureteral catheterization and includes the following steps:

- (a) Palpation of abdomen for enlargement of one or both kidneys.
- (b) Catheterization of the bladder in order to be certain that no urine is being excreted.

One must always remember that a severe diarrhea or the vomiting of large quantities of fluid or profuse perspiration may greatly decrease the quantity of urine secreted.

(c) Plain radiography. Even when there is a history of one or more attacks of colicky pain, a shadow of a calculus may be absent or the obstruction as in several of our cases, be due to an impermeable ureteral stricture. About 15 per cent of all renal and ureteral calculi are shadowless, so that too much reliance must not be placed on a negative film.

(d) Cystoscopy and ureteral catheterization.—This will enable one to differentiate a secretory from an obstructive anuria more rapidly than any other method. Cystoscopy will reveal whether only a single or two normally located<sup>10</sup> ureteral orifices are present. If one fails to encounter any obstruction when both catheters are introduced for a distance of 28 to 30 cm. on both sides and still no urine (or indigocarmin in-

<sup>9</sup>As the result of previous operation or congenitally absent or hypoplastic (see above).

<sup>10</sup>In a small percentage of cases of congenital solitary kidney, there may be two ureteral orifices normal in appearance and location, but the ureter is rudimentary (3.4 cm.) on the aplasia side as in one of our cases.

<sup>7</sup>Jour. A. M. A. 85, 10 (July 4), 1925.

<sup>8</sup>Loc. cit.

jected intravenously) escapes, the anuria is not of the obstructive type.

If previous plain radiography revealed the presence of suspected calculous shadows, the diagnosis can be rapidly confirmed by the detection of an obstruction in one or both ureters or renal pelves (Fig. 2). If an obstruction due to a calculus or a stricture be found on one side and there is no obstruction on the opposite side, the anuria is due to a reno-renal reflex, *i.e.*, an inhibitory influence transmitted by way of the splanchnic nerves of one side to those of the opposite kidney (H of Fig. 2). If the obstruction has been passed on one side and urine begins to escape continuously from the distal end of the ureteral catheter on this side, but either fails to do so from the opposite side or only a small amount of urine or indigocarmine is excreted from the opposite side, one must be suspicious of the presence of a hypoplastic organ, or of the absence of the opposite kidney (congenital solitary) or of a marked decrease of function as the result of disease. Pyelography is contraindicated during an anuria but there can be no objection to it a few weeks later.

(e) Blood chemistry. This is at present the most reliable criterion of the degree of nitrogen retention in the blood. It does not yield much information as to retention in the tissues. For clinical purposes, however, the percentage of urea and of creatinin which daily chemical examinations of the blood reveal, are an index of how close one is approaching to the period of intolerance. Total nonprotein nitrogen contents of above eighty or of creatinin above 2.5 mg. per 100 c.c. are danger signals which must not be disregarded.

#### TREATMENT OF ANURIA

The first problem is to determine at as early a period as possible, whether the anuria is of the secretory or obstructive type. The outlook is not as good as a rule in the former. The therapeutic measures at our disposal are the following:

1. Administration of large quantities of fluid.  
(a) By proctoclysis. This at first glance appears to be an inadequate method, yet it is surprising to observe the quantity which can be given by this route in twenty-four hours. We prefer to employ a ten per cent glucose solution with ordinary tap water.

(b) Hypodermoclysis. This method of administration has its limitations but one can give 1000 c.c. of distilled water if necessary at least three or four times in twenty-four hours, preferably into the submammary or axillary tissues.

(c) Intravenous administration. It is astonishing to note the relief of such symptoms as hiccough following the use of a 10 per cent glucose solution<sup>11</sup> thus given. One is limited to perhaps one or two injections in twenty-four hours.

(d) The use of the duodenal tube. McCarthy, Killian and Chace<sup>12</sup> were successful in relieving an anuria of reflex origin by giving a 4 per cent glucose and 2 per cent sodium bicarbonate solution through the duodenal tube. Unless one has tried the administration of large quantities of fluid by this method, it is difficult to realize how simple and efficacious it proves to be.

2. *Nerve blocking*.—This is a comparatively recent method and depends on the ability to block<sup>13</sup> the nerves (splanchnics) which inhibit renal secretion. Relief of cases of anuria by this method have been reported by Neuwirt,<sup>14</sup> and Haslinger<sup>15</sup> in reflex anuria (due to calculous block on the opposite side) and by Havlicek<sup>16</sup> in two cases of anuria in scarlatinal nephritis and also in one case of eclampsia. Rubritius states that splanchnic block has been successful in seven of eight cases. We have had no personal experience but believe it worthy of trial in cases especially of reflex anuria after removal of the contralateral obstruction or the passage of a ureteral catheter beyond the obstruction, has been unsuccessful.

3. *Decapsulation*.—Several successful cases have been reported. In a recent case of Nicolich<sup>17</sup> the anuria developed on the second day after a nephrectomy. Decapsulation of the remaining kidney relieved the anuria. A similar successful outcome in a case of scarlatinal nephritis is reported by Higgins and Graf.<sup>18</sup> Decapsulation for bichloride nephrosis has only been followed by one recovery in twenty-three reported

<sup>11</sup>It is best to dilute a concentrated (50 per cent) solution now put up in ampoules by several pharmaceutical houses.

<sup>12</sup>Jour. Am. Med. Assn. 80, 1043, 1923.

<sup>13</sup>The technic is described in Labat's book on Regional Anesthesia, in the recent monograph by Mandl (Julius Springer, Vienna, 1926) on paravertebral injection as well as in the article by Haslinger (Zeit. f. Urol. 21, 174, 1927).

<sup>14</sup>Zeit. Urol. Chir. 11, 75, 1922.

<sup>15</sup>Zeit. Urol. 21, 174, 1927.

<sup>16</sup>Zeit. Inn. Med. 46, 465 (May 16), 1925.

<sup>17</sup>Jour. d'Urol. 20, 41, 1925.

<sup>18</sup>Am. Jour. Dis. Child. 33, 926, 1927.

cases. It is claimed by those who advocate the use of splanchnic block that the latter is equally as effective as decapsulation.

4. *Ureteral catheterization.*—*This offers the best outlook in cases of obstructive anuria* and should be given a trial for forty-eight hours but not longer. It may only give temporary relief so that the patient is in much better condition for later operative procedures if one or both kidneys have been drained by the inlying ureteral catheter. Rubritius<sup>19</sup> collected 118 cases of calculous anuria reported up to 1926. The relief of the anuria was permanent in 99, temporary in 11 and failed in eight cases. Our own five cases in which the anuria was completely or temporarily relieved by ureteral catheterization are not included in these statistics. No time should be lost before this method of treatment is instituted in a case of anuria due to obstruction by a calculus or a ureteral stricture. Every twenty-four hours of delay in relieving the anuria means a rapid increase in the mortality rate. If one is unable to pass the obstruction, immediate operative interference is indicated. The same is true of cases in which the catheters (ureteral) become blocked or are expelled and the anuria recurs. Ureteral catheterization should always be supplemented by the administration of large quantities of fluid as described above.

5. *Operative Measures.*—The value of decapsulation in certain cases of nephrosis and nephritis

has been referred to. This method is worthy of trial in the secretory type of anuria when splanchnic block and other measures fail to give relief. *In obstructive anuria, operative interference is no longer the only method of treatment. It has been superseded to a great extent by ureteral catheterization.* The type of operation to be employed in cases in which ureteral catheterizations, splanchnic block and other methods have failed, depends somewhat upon the experience of the individual operator. Some prefer nephrostomy, or pyelostomy or ureterostomy respectively with removal of the calculus at the same sitting. Much depends on the condition of the patient. If operation is undertaken during the first days of the anuria when there are no evidences of even the minor degree of intolerance, as mentioned under symptoms, it is justifiable to remove a calculus which obstructs the ureter or renal pelvis and utilize the ureterostomy or pyelotomy for drainage purposes. If, however, the symptoms of even the minor degree of intolerance (such as hiccough, apathy, twitching, emesis, etc.) are present, it is advisable to be content with a pyelostomy under paravertebral anesthesia and remove the ureteral obstruction secondarily. When the results of the chemical examination of the blood reveal a total nonprotein nitrogen of 150 mg. per 100 c.c. or even higher and a creatinin of 5 mg. or higher, neither nonoperative nor operative measures are of much avail.

<sup>19</sup>Loc. cit.

#### FAKE COD LIVER OIL TABLETS IN ENGLAND

In the city of Salford, England, there was sold at a large chain drug store "McCoy's Cod Liver Oil Extract Tablets." The town of Salford proceeded against the store in question, prosecuting it for selling cod liver oil tablets that were essentially misbranded. Chemical and biologic tests showed that McCoy's Cod Liver Oil Extract Tablets contained neither vitamin A nor vitamin D, and that, medicinally as a substitute for cod liver oil, the tablets were worthless. (Jour. A. M. A., May 12, 1928, p. 1575.)

#### LIVER IN SECONDARY ANEMIA

There is clinical evidence both for and against the effectiveness of liver diet in anemias other than the pernicious type. (Jour. A. M. A., May 19, 1928, p. 1650.)

#### R. P. N. TABLETS

One of the latest humbugs in the field of epilepsy mail-order quackery is the product called "R. P. N.," put out by the Arpen Laboratories, which does business from a postoffice box in Milwaukee, Wis. In the advertising that is sent out the sufferer is led to believe that, in R. P. N. Tablets, there is a cure for his ailment. The A. M. A. Chemical Laboratory analyzed the preparation and concluded that each tablet is equivalent to 0.2 gm. ammonium bromide; 0.45 gm. of sodium bromide; 0.11 gm. of sodium chloride, and 0.0031 gm. of potassium bromide. From the analysis it is seen that R. P. N. Tablets belong to the old-time group of quack "epilepsy cures," consisting of mixtures of bromides. The preparation will not cure a case of epilepsy, while, indiscriminately used—as it must be—by persons who are ignorant that it contains bromides, may easily result in adding to the epileptic sufferer's condition the dangers of bromism. (Jour. A. M. A., May 26, 1928, p. 1728.)

# THE TREATMENT OF ARTERIOSCLEROTIC GANGRENE AND ALLIED TROPHIC DISORDERS\*

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TO the average clinician, the subject of the treatment of gangrene has, until recent years at least, been very short and easily disposed of, *i.e.*, wait for a line of demarcation and amputate.

In order that the rationale of treatment we have employed may be more obvious, a brief outline of classification, clinical manifestations and pathology seems imperative. Perhaps in no field of medicine have greater difficulties arisen in clinical diagnosis than in that of circulatory diseases. We are greatly indebted to Buerger for clarifying the field and his classification is undoubtedly the best to date. He deviates from the old classification and offers the following:

- I. Gangrene due to external or direct causes, *viz.*—
  - A. Trauma
  - B. Thermal
  - C. Chemical causes
  - D. Microbic action
- II. Gangrene due to internal or indirect causes:
  - A. Injury to main nutrient vessel to a part
  - B. Diseases of blood vessels
    1. Arteriosclerosis
    2. Thrombo-angiitis obliterans
    3. Endarteritis
    4. Miscellaneous affections of arteries
  - C. Thrombosis and embolism
- III. Neuropathic gangrene

Gangrene may be defined as death of tissues due to impaired or absent blood supply.

It can only be prevented by virtue of the development of an adequate collateral circulation—and this fact prompted the work which we have carried on and outlined in this writing.

With the thought of establishing collateral circulation before gangrene actually takes place or when the first signs of necrosis appear, it is necessary to recognize the premonitory symptoms of gangrene and to keep in mind the factors

which influence its development, if therapeutic measures are to be of any avail. These factors fall into two groups, general and local conditions of the patient. To general conditions belong age, prolonged illness, infection, diabetes and syphilis, while to local conditions belong trauma, inflammation, local vascular diseases, posture and stasis from constrictions, etc.

The subjective and objective phenomena which signalize the advent of gangrene are essentially those of impaired circulation.

1. The chief and most constant subjective symptom is that of intermittent claudication or cramp-like pain in the muscles of the legs during exercise, which disappears on rest. This is almost a constant symptom in cases of threatened gangrene. Often there is a complaint of weakness in these muscles.

2. Coldness: both subjectively and objectively, occasional numbness or paresthesia in the extremities is fairly constant.

3. Coldness is sometimes accompanied by cyanosis.

4. Rubor of a reddish-purple color termed "erythromelia" by Buerger is present with a limb in the dependent posture.

5. Absence of pulsations in palpable vessels of extremities.

6. Blanching on elevation of extremities above horizontal.

7. Trophic changes and occasional thrombosis.

So manifold are the clinical pictures presented by the various types of circulatory disorders that a given case may present any number of the above symptoms. A typical clinical course usually begins with pain in the calves of the legs on walking, then coldness of toes or feet and occasionally an ulcer develops on the toe or foot. They may get along with no ulcer or gangrene until exposure to cold or trauma causes necrosis and a patch of dry or moist gangrene. Diabetics particularly often report for treatment

\*From the Department of Surgery, Minneapolis General Hospital. Presented before the Minneapolis Surgical Society Jan. 5, 1928.

of an ulcer on the foot or an ulcer of the nail bed with a patch of dry gangrene.

The clinical forms may be anything from simple trophic disorder only to cases of chronic gangrene with atrophy of all tissues including bone and mummification of tissues from the knee down. Arteriosclerotic gangrene rarely affects the upper extremities.

According to Buerger, so-called diabetic gangrene does not vary from arteriosclerotic gangrene from a pathological standpoint. The symptoms may be identical in the two conditions or may vary slightly after trophic disorders develop due to hyperglycemia. Diabetics are more prone to develop gangrene as a result of trauma. Many of the clinical symptoms of impaired circulation may be absent but the arterial changes are the same. Marchand defined arteriosclerosis as a deteriorative disease of vessels. Because of the fatty changes that occur in the vessel walls this disease had been termed "atherosclerosis" in contradistinction to Lobstein's term arteriosclerosis. Virchow described the hyperplastic changes of the intima as an "endarteritis." Taking Buerger's summary of the arterial lesions in arteriosclerotic and diabetic cases, it reads thus: "Extensive degeneration of arterial walls, intense occlusion of a vessel course or combinations of intense arteriosclerosis with thrombosis.

Hence the sequence of these lesions is impaired nutrition due to thickening, loss of elasticity and occlusion from atherosclerosis or thrombosis. The larger arteries only are affected in this type of arterial disease—the small vessels remaining unchanged. For this reason, the use of postural measures, hypertonic bacteriocidal solutions and especially local heat as therapeutic agents to develop collateral circulation in the small arteries and clean up infections, seems very rational. The end-result is mechanically a loss of blood supply and consequently can be treated only by attempts to establish collateral circulation.

Our attempts have been limited to the treatment of arteriosclerotic gangrene and, as previously stated, include that in diabetics. One case of Raynaud's disease was also treated and will be reported later.

Our aim has been to treat these patients prophylactically when possible and to classify them according to case types. Prophylactic measures consist in instructing the patient to avoid

long periods of walking or standing, severe exposure to cold, possible trauma from blows, tight shoes, to avoid treating corns, ingrown nails, etc., and to keep clean. Some men claim that alcohol and tobacco should be restricted. Diabetics should be cared for by a competent internist. This is extremely important, as will be brought forth in a case report to follow. No case needs greater coöperation in the treatment of gangrene than the diabetic for the response of gangrene to local treatment in such a case is in direct ratio to the state of the blood sugar.

The methods we have used to improve the circulation have been postural, thermal and combinations of the above using moist and dry heat. We have not used diathermy. Methods somewhat similar to these were first used by Buerger in treating thrombo-angiitis obliterans. Postural treatment consists in producing periods of ischemia by elevation of the extremity followed by hyperemia with the extremity in a dependent position and alternating with circulation in a horizontal position. Here again the cases must be well chosen. When gangrene is extensive or where cellulitis or thrombophlebitis is present this treatment is too drastic and is contraindicated.

For an early case the leg is elevated high enough to produce blanching, in other words above the angle of sufficiency. It is held in position by an overhead sling or a Thomas splint as shown in the photographs. While in this position the extremity is kept as warm by dry heat as comfort will allow. This tends to produce a capillary hyperemia and at least prevents the degree of ischemia which would result without it. This position is maintained from fifteen to forty-five minutes and then the patient sits up and hangs the leg down on the floor, usually in a water bath at a temperature of 90 to 105. All cases having ulcers, abrasions, moist gangrene or small areas of dry gangrene are hung in a bath of saline or 2 to 4 per cent boric acid at the above temperatures. This increases the hyperemia of posture, maintains heat, and combats infection. After fifteen to thirty minutes in the dependent posture the patient is given a rest period with the leg in a horizontal position for an hour. Each cycle or seance of this character occupies two to three hours and we aim at giving three or four treatments daily. Some patients cannot endure these changes of posture

very long because of pain and their treatment is shorter at each sitting, making the rest period longer. All foci of infection, systemic disease such as diabetes, nephritis or syphilis should be actively treated by competent measures. We have proven that ordinary so-called hot packs and

judgment of the surgeon. When conservative measures fail, our experience has been that an amputation of the lower extremity above the knee is most satisfactory.

In going over the records at the Minneapolis General Hospital, there were twenty-five cases



Fig. 1. P. K. photograph taken June 19, 1926, shows gangrenous ulcer on the dorsum of the right foot.\* The extensor tendon of the first toe has sloughed. At the present time the foot is still perfectly healed and the patient has full use of it.



Fig. 2. Foot bath resting on the floor, with gangrenous foot immersed in boric acid solution.

external heat is insufficient to induce and stimulate collateral circulation.

In cases of diabetic gangrene it is desirable to prevent extension of local lesions in an effort to avoid the necessity of amputation. Sloughs, if present, should not be removed but be allowed to drop off. Dakin's solution is a very valuable adjunct in treating infected ulcers and sloughs. Cellulitis when localized should be drained by incising conservatively under general (gas) anesthesia. Local anesthesia is contraindicated.

This rather detailed discussion has centered mostly upon local conservative treatment of trophic disorders and focal gangrene. Nevertheless local treatment of these cases in a diligent manner will save many extremities which are sacrificed as a result of apathetic management and lack of interest.

Amputation is a last resort in treatment and some cases will need it irrespective of diligent treatment.

Indications for amputation depend upon the extent and rapidity of the spread of gangrene, the presence of infection which does not yield to conservative treatment, the severity of pain and the general condition of the patient. The choice of time and place to amputate must rest with the

of arteriosclerotic and diabetic gangrene admitted for treatment during the past three years. This excludes all complicated cases such as traumatic, infectious and embolic gangrene. Of these cases twelve were diabetics, ten males averaging sixty-three years of age and two females averaging fifty-six years. Seven patients died, two of whom had a leg amputation—a mortality of 59 per cent.

Of thirteen cases of senile gangrene, twelve were males averaging seventy-two years of age and one was a female of sixty-eight years. Seven of these patients, or 53 per cent, died, two of whom had amputation. Five patients with amputation survived. It is evident from these figures that diabetes associated with arteriosclerosis hastens the development of gangrene. Dean Lewis in a recent article states that gangrene in diabetics develops about a decade earlier than in purely senile patients. The figures from our cases show gangrene developing about ten years later than those quoted by Lewis.

The following table has been made up from our small series:

	No.	Per cent
Total cases .....	42	
Conservative treatment .....	24	57.1
Radical (amputations) .....	18	42.9
Deaths .....	20	47.6

The number of cases treated by the above measures have been too few to warrant any

sweeping conclusions, but from the case reports that follow and from recent experience, the following conclusions are conservatively correct.

1. Trophic disorders associated with arteriosclerosis respond readily to conservative measures as outlined in this paper.

2. Trophic ulcers and focal gangrene can be arrested in development and healed without amputation.

3. Diabetes, syphilis and any other systemic or constitutional disorder must be treated if local measures are to be of any avail.

4. Collateral circulation can be established and the necessity of amputation prevented by vigorous and diligent treatment in a fair percentage of cases.

#### CASE REPORTS

*Case 1.*—W. S., male, aged 64, was admitted to the Minneapolis General Hospital Nov. 22, 1927.

**Present Complaint:** Pain and swelling of the left foot.

**Present Illness:** Patient had a corn at the base of the little toe which caused him some trouble. About two or three months ago he cut his corn so deeply that it bled. A discharge continued for a few days but the base of the little toe continued to ache until two or three weeks ago. The ball of the foot began to pain as if the patient were stepping on needles. Calves of legs would feel cold and right foot began to swell. Pain and swelling increased and patient noticed a slight mottling of the left foot. Patient has been treating for diabetes during the last year and has had a qualitative diet.

**Physical Examination:** Well developed male, age 64. Nothing abnormal except left foot. Pulse 84. Temperature 97.8. Respiration 18. Blood pressure 148/76. Left foot appears swollen and somewhat mottled in appearance. Purplish discoloration present over big toe and ball of foot. The dorsalis pedis artery on both feet can be felt pulsating. Slight tenderness over heads of fourth and fifth toes.

**Laboratory:** W. B. C. 8,900. Urine negative for sugar.

**Blood Chem.:** Blood sugar .125 gm. on admission. On Dec. 30, 1927, blood sugar .136 gm.; Van Slyke 56 per cent; urea 12.8.

**X-ray:** Shows marked calcification of arterics of both feet and legs.

**Course and Treatment:** Patient was put on a diabetic diet C. 80, Prot. 60, Fat 180 gms., 2,100 Cal.

**Local Treatment:** Hot wet packs to foot; rest posture as previously described, and dry heat. Patient did not progress well. A blister formed on the medial side of the big toe and an area of focal necrosis formed at base of fourth and fifth toes. Treatment was changed to foot baths for a half hour three times daily and elevation posture. Elevation and light basket at

night. The area of necrosis was incised Dec. 31, 1927, and sanguino-purulent material expressed and the cavity curetted. The above treatment was continued. There has been no further extension of the gangrene and healing appears to be taking place.

**Diagnosis:** Diabetes mellitus; gangrene of left foot.



Fig. 3. Method of elevation of extremity suspended by a cuff around the ankle, with the light basket suspended above the foot.

*Case 2.*—P. K., a male, aged 67, was admitted to the Minneapolis General Hospital May 13, 1926.

**Present Complaint:** Pain, tenderness, and discoloration and discharge from right big toe of three weeks' duration.

**Present Illness:** Started with a sore spot at base of the big toe which later became tender and swollen. A week later the skin turned black and bleb formed. This was incised and has drained since. Redness, swelling and pain have increased.

**Past History:** No bearing on present trouble.

**Physical Examination:** A gangrenous ulcer on the dorsal surface at the base of the right toe about 3 cm. in diameter; bloody, purulent discharge. Tendon of big toe visible; area of redness about ulcer. No definite line of demarcation. Dorsal pedis artery not felt.

Temperature septic 99 to 102. Pulse 74 to 86. Leukocytes 10,700. Urine negative for sugar. Blood sugar .130 gm. X-ray shows moderate calcification of arteries of leg.

**Treatment:** Patient was put on a diabetic diet on general principles. Local treatment; hot boric packs, and light basket continuously, with foot baths t.i.d. for two hours each time. This was later changed to Dakin's packs for a time. Foot elevated.

**Course:** Ulcer improved very nicely; eschar and granulations were removed by silver nitrate stick. Later ulcer again broke and necrosed through a vessel wall with profuse bleeding. X-ray two months after admission showed evidence of an osteomyelitis with infectious arthritis of the left foot. Necrosis and gangrene spread. The dead tissue was excised. An abscess on the lateral side of first metatarso-phalangeal joint was opened and irrigated with Dakin's. Healing took place slowly because of sequestrum at the head of the first metatarsal bone. Wound closed down and patient went home to continue soaking foot until healed.

Ulcer extended from first joint of toe to include half the dorsum of the foot and when patient was discharged from the hospital ulcer was size of a dime. The patient now has a perfect foot as to function, and only a small cicatrix remains. This case shows what can be done by diligent treatment. He was saved from amputation and economic dependence.

Diagnosis: Gangrene, chronic, right large toe anterior; arthritis chronic; osteomyelitis first and second metatarsal; phalangeal and tarsal joints.

Case 3.—J. G., a male, aged 46, was admitted to the Minneapolis General Hospital Dec. 24, 1926.

Present Complaint: Inflammation of right heel and ankle of nine days duration. Has had diabetes for ten years. Patient scratched his heel about eight days ago. Foot began to become inflamed, swollen and very painful, and a sore appeared on the heel which gradually grew larger. On the third day, patient called a physician, who applied water and epsom salts continuously for two days. Swelling decreased greatly and physician was discharged. Foot soon began to become worse and patient was hospitalized.

Past History: Patient has had diabetes for ten years, was on a diet for two years but not since. Has had no symptoms the last eight years.

Examination: There is an area of inflammation extending upward toward and about the ankle with a smaller area about the size of a quarter on the antero-lateral aspect of the right leg just above the ankle, covered with dead skin and containing a firm yellow necrotic material.

Laboratory: A trace to 5 gms. of sugar present in urine each 24 hours. Blood sugar .10 to .341 on admission.

X-ray: Marked calcification of the arteries of both legs.

Treatment: The dead epithelium was cut away. Patient was confined strictly to bed, with leg elevated and light basket constantly in use. Foot bath was prescribed t. i. d. for two hours each time. Diabetic diet outlined.

Course: Ulcer on heel on admission was about three inches in diameter and under above treatment by Jan. 14, 1927, it was only 1 by 3 cm. and very shallow. Edges were clean and growing rapidly. Patient became impatient and left against advice of staff. Patient advised to continue the same treatment. By Feb. 1, 1927, the ulcer was entirely healed.

Diagnosis: Diabetic gangrenous ulcer of heel of right foot; diabetes mellitus; otitis externa.

Case 4.—W. S., a male, aged 66, was admitted to the Minneapolis General Hospital April 14, 1926.

Present Complaint: Pain, feeling of coldness in toes, and discoloration of second right toe of nine days duration.

Present Illness: Began with a blister as the result of too tight shoes. Patient opened blister and continued to wear the same shoes. Three nights later patient noticed dark discoloration of the toe. Later the ankle began to throb and ache and the toes became cold. Darkened area persisted.

Past History: Patient has had diabetes for twelve years.

Physical Examination: Shows evidence of dehydration and marked weight loss. The middle toe of the right foot is gangrenous (dry) and the distal metatarsal joint is reddened with ulceration on the dorsal surface about 1 square inch in diameter.

The temperature and pulse are normal. Urine con-

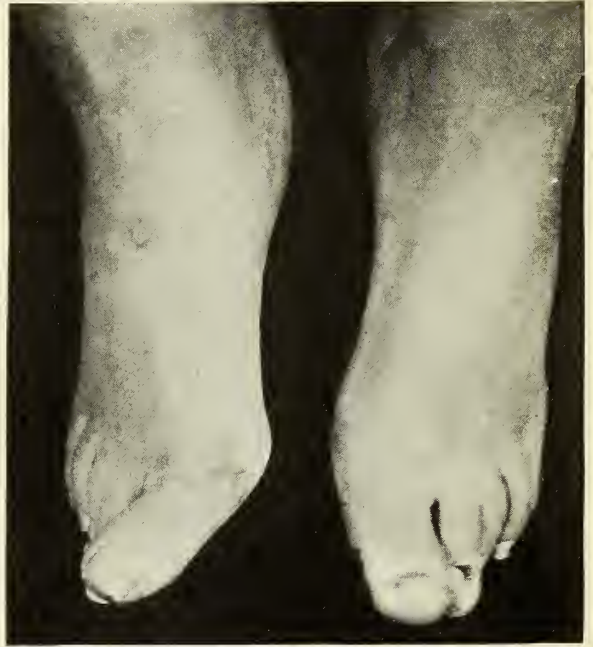


Fig. 4. Wm. B. Areas of necrosis and gangrene appear on the toes of both feet and on the dorsum of the right foot and on the medial aspect. These were completely healed after four weeks of treatment.

tains 4 plus sugar. Blood sugar 24 per cent, a trace of acetone.

X-ray shows no evidence of calcification of arteries in feet or legs.

Treatment: Patient was put on a diabetic diet and insulin. Hot boric acid packs were applied, the foot elevated and the light basket was used. Frequent dressings were used.

Course: Under diabetic regime the blood sugar dropped from .181 gm. to .15 and the urinary sugar and acetone disappeared. A line of demarcation began to form and the distal phalanx of the second toe dropped off. X-ray showed destruction of the second metatarsal bone with evidence of an osteomyelitis in the second metatarsal, proximal phalanx of the third toe and in the fibula. Ulcer healed slowly and patient left the hospital improved on June 8, 1926, against advice of the staff. Patient presented himself for examination 18 months later and was perfectly well. This case is one which ordinarily would have come to amputation.

Diagnosis: Diabetes mellitus; diabetic gangrene.

Case 5.—W. B., a male, aged 78, was admitted to the Minneapolis General Hospital June 2, 1926.

Present Complaint: Pain in second toe, ulcer of toe and swelling of foot and ankle all dating since January, 1925.

Present Illness: Patient had an ingrown toe nail

removed in December, 1924. In January, 1925, he began to have pains in the great toe with intermittent claudication in the calf of leg. In later part of January, 1925, an ulcer appeared on the second toe. Patient noticed a drying of the foot and enlargement of the ulcer.

Past History: "Stroke," in October, 1920, during which time both legs were paralyzed temporarily. A second stroke in 1922 caused paralysis of the left side from the waist down. The paralysis has cleared up since.

Physical Examination: There is a marked edema of ankles with a large ulcer at the base of second toe of right foot.

Blood pressure 162/90. Pulse 74. Temperature 98. Respiration 16. Urine normal. Blood normal. Wassermann negative.

X-ray showed slight evidence of calcification of the arteries.

Treatment: Hot foot baths, posture with light basket.

Course: Under treatment the ulcer healed very satisfactorily and the patient was discharged June 26, 1926.

Patient returned Dec. 7, 1926, with gangrene of the right great and second toe, with intermittent claudication in both calves. Legs tired very easily. Blood pressure 170/90. No dorsalis pedis could be felt. The foot was cyanotic and cold. Angle of circulatory sufficiency 135 degrees.

Treatment as outlined above was instituted and ulcers healed readily. Patient was to be discharged when he suddenly developed a broncho-pneumonia and was transferred to medicine for treatment. Patient became progressively worse and died Jan. 5, 1927. Cause of death: Terminal broncho-pneumonia. Gangrene at time of death had disappeared and ulcer was healed.

Diagnosis: Senile gangrene of second toe of right foot.

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### ARMSTRONG'S OXYCATALYST

The Radium Research Foundation, Los Angeles, Calif., offers a treatment for cancer, the "Armstrong Oxycatalyst." The Radium Research Foundation also puts out a product known as "Radium-Sol" which is reported to be "the great gland activator and oxygenizer of the blood." This, it seems, is a "patent medicine." A recent article in a California newspaper purports to be a report of an interview with Mr. Armstrong regarding the Armstrong Oxycatalyst. A second article purports to be a report of interviews with Dr. Charles M. Tinney and Stanley Boller. Dr. Tinney was reported as declaring that he had personally seen 200 to 300 cases of cancer and that only Mr. Armstrong "knows all the ingredients of the fluid." According to a report of Dr. Tinney, used in the promotion of the "Oxycatalyst," the preparation "is a radium derivative which Prof. Armstrong has combined with a catalyzer." The report takes the position that cancer is "a protein mass in which the sulphur, phosphorus and nitrogen are out of their normal valence and therefore are foreign to the general protein of the body" and that the action of Armstrong's Oxycatalyst is that of dissolving and digesting the cancer mass. While the "Oxycatalyst" is claimed to have a scientific background, it has not been submitted to the

Council on Pharmacy and Chemistry for consideration. Although the use of the preparation is admitted to be in the experimental stage, there are agencies for the product and large fees are charged in certain instances for its use. Whether Mr. Armstrong's preparation is an addition to the medical armamentarium in the treatment of cancer or just another "cancer cure" is yet to be determined. (Jour. A. M. A., May 19, 1928, p. 1647.)

### DEXTROSE SOLUTIONS CONTAINING CRESOL

The Council on Pharmacy and Chemistry reports that it has considered a communication objecting to the acceptance for New and Non-official Remedies of solutions of dextrose (d-glucose) in ampules containing 0.1 per cent of cresol. It was held that injection of cresol into the blood stream is the cause of many reactions which sometimes follow injection of dextrose solutions containing it. The Council concludes that the harmfulness of cresol in the amounts used in dextrose solutions has not been demonstrated. The Council decided to request manufacturers of dextrose ampules intended for intravenous use to consider the elimination of cresol as a preservative as possibly harmful. (Jour. A. M. A., May 26, 1928, p. 1711.)

# THE LYNCH TYPE OF RADICAL FRONTAL SINUS OPERATION\*

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THE Lynch type of external operation has been used satisfactorily in cases of chronic suppurative frontal sinusitis. It has purposely not been used when there was fistula, necrosis, or sequestrum of the external table of the frontal bone. As a rule patients, especially women, object to the external operation, but if they have endured a great deal of discomfort for a considerable time almost any type of operation that promises relief will be accepted. If scarcely any deformity results the patients are, of course, particularly gratified. Such results are possible with the Lynch type of operation.

As in the previous treatment of frontal sinusitis, the conservative two-stage operation has been found increasingly satisfactory. In the first stage, the infected cells in the vicinity of the nasofrontal duct and posterior sinuses, including the sphenoid sinus, can be dealt with, thus completing a large portion of the operation under the most favorable conditions.

Prentiss, Mosher, and others have shown that the size, number, and arrangement of the paranasal sinuses vary greatly. The roentgenogram may be relied on to show the size and conformation of the sinuses, but, as in any other disease, the main dependence in making a diagnosis must be placed on the history and clinical data. Therefore, the patient with paranasal sinuses should be kept under observation long enough to determine the extent of involvement, and the type of surgical intervention (if any) that is indicated.

Certain patients who complain of frontal pain may be relieved of symptoms by clearing up of the infection which exists in the antrum of Highmore. If the infection can be traced to the frontal sinus by a process of elimination, an attempt is usually made to cure the disease by intranasal operation, under local anesthesia with the patient in the sitting position. The agger nasi and any ethmoid cells which interfere with drain-

age or direct approach to the nasofrontal duct are thoroughly removed. The nasofrontal duct can always be reached through the lateral wall of the nose, just at the attachment of the anterior end of the middle turbinate (Prentiss). If the wall of the nose is taken down laterally, the frontal sinus can be approached more directly and from below rather than at an angle, which is the normal course in nearly all instances. This method of approach has the added advantage of providing direct dependent drainage into the nose from the diseased sinus, thus simplifying treatment. In case an external operation should become necessary, much of it will have been accomplished at a time when the customary landmarks were present and the surgeon could look into the nose from an angle in which the routine examination is made.

## TECHNIC

The technic of the external operation is described by Lynch. He emphasizes the importance of thorough removal of the floor of the sinus as well as all ethmoid and ethmofrontal cells in the vicinity of the agger nasi and infundibulum. He states, also, that much of the intranasal work has been done in an attempt to avoid the external operation by conservative measures. These points have been corroborated by experience in sixteen cases discussed here.

Lynch asserts that the upper portion of the flap should not be disturbed by separation of the periosteum from the bone, and that sutures should not be passed through the periosteum of the upper flap in closing the wound, in order to prevent, if possible, extension of the disease over the forehead. Failure to obtain relief from symptoms has been due, usually, to the overlooking of a small ethmofrontal cell or a tendency to hyperplasia or polypoid formation at the entrance to the frontal sinus, such a condition preventing drainage, causing continuance of discharge, and often producing pain. In this type of operation it is possible to expose thoroughly the interior of the sinus by removing more of the anterior table under the eyebrow. In this way any pathologic condition encountered may

\*From the section on Otolaryngology and Rhinology, Mayo Clinic, Rochester, Minnesota. Read before the Sioux Valley Eye, Ear, Nose and Throat Society, Omaha, Nebraska, Feb. 15, 1928.

be dealt with, even to the extent of removing the entire mucosa or diseased bone from the inner table. The objection which has been made to the Lynch type of operation that the large sinus with many pockets could not be dealt with

thetist is able to watch the patient without interfering with the operator.

Before closing the wound with silkworm-gut and dermal sutures, the sinus is packed with gauze saturated with vaseline or balsam of Peru.



Fig. 1. Scar over left eye nine months after operation.



Fig. 2. Scar over right eye three weeks after operation; over left eye, nine months after operation.

thoroughly, has not been borne out in this series. The removal of slightly more of the external table has allowed satisfactory exposure in this type of anatomic configuration without influencing the cosmetic effect.

After the nasofrontal communication has been enlarged sufficiently, any remaining ethmoid cells, or any of the middle turbinates can be removed by direct approach from in front, should such a procedure be necessary. The sphenoid sinus may be dealt with in the same manner. If the pharynx has been protected by a postnasal pack, there should be no danger from aspiration.

Nearly all of the operations in this series of cases have been performed under ether colonic anesthesia, which is a distinct advantage especially from the standpoint of the surgeon, because it leaves the field of operation free from encumbrances. After the patient is asleep, the anes-

The pack is passed through the enlarged nasofrontal duct into the nose. An external drain is not used. The nasal pack is gradually removed during the next four or five days. The post-operative treatment after the patient has left the hospital is carried out by means of suction with a canula and the maintenance of the patency of the nasofrontal duct by daily insertion of dilators.

#### RESULTS

Twelve of the sixteen patients in the series had been operated on elsewhere. Chronic infection had extended over periods of from a few weeks to eight years in all but one case, in which the process was acute, with proptosis of the eye and atrophy of the right optic nerve. This patient was operated on without preliminary intra-

nasal operation for obvious reasons. Intranasal operation had not previously been performed on three other patients.

In cases in which pain and discomfort were

The entire sinus was flattened out and obliterated by removal of the anterior wall. All evidence of infection cleared up and the patient remained well. In one other case the wound was reopened



Fig. 3. One year after operation. Scar is on left side of nose and over left eye.

due to the sinus infection or obstruction to the nasofrontal duct, the relief after operation was complete. The cosmetic effect of the operation has been excellent. After thorough healing of the wound, the scar in most cases is not noticeable except on close inspection. The results were uniformly good in all except three cases. In one case atypical neuralgia complicated the diagnosis. The infection cleared up but the pain persisted. This was later relieved by injection of alcohol into the second division of the fifth nerve. In one case in which operation had been performed elsewhere there was no positive evidence of infection; exploratory operation gave no relief. The cause of the pain was not determined. One patient had recurrence of symptoms after being apparently cured for several weeks. A modified Killian operation was performed and it was found that the nasofrontal duct was obstructed by recurring polyps which had filled the sinus.

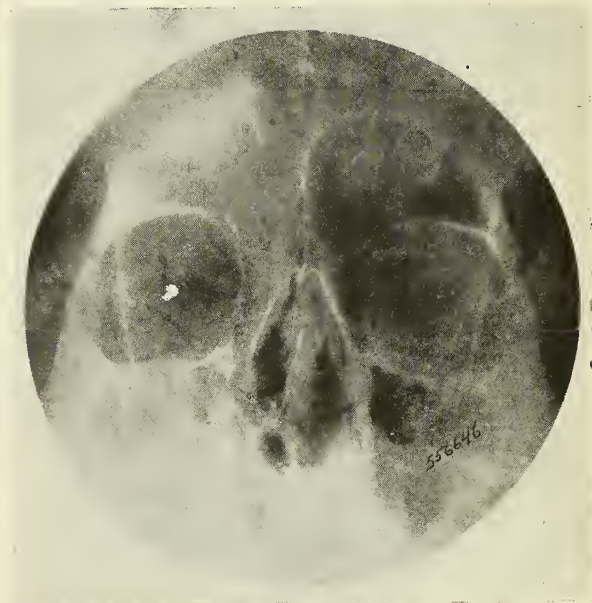


Fig. 4. Deep pocket at inner angle and anterior portion of sinus extending out towards external angle of the eye.

three weeks after operation but no evidence of infection was found.

One patient complained of severe frontal pain on the left side on exposure to cold air. There was no evidence of suppuration and exploration



Fig. 5. Frontal sinus with several pockets separated by partial septa.

revealed a beginning mucocele. The symptoms, which were completely relieved, were probably due to pressure from swelling of the membranes in the sinus (Figs. 1 to 5).

#### CONCLUSIONS

In suppurative frontal sinusitis, the Lynch type of operation is satisfactory. The cosmetic effect is excellent. If there are complications such as draining fistula, destruction of the external table of the frontal bone as a result of previous operative procedures, disease, or a marked tendency to polyposis, a more radical type of operation is indicated. If the fistula is situated in the upper lid or sequestration of the floor of the frontal sinus is present, the Lynch type of opera-

tion gives excellent results. In all external operations if the sinus has not been entirely obliterated the chief difficulty is a tendency of the new nasofrontal duct to close. This can be obviated to a great extent by the use of dilators.

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## RECENT CHANGES IN OUR VIEWS CONCERNING DISEASES OF THE LUNGS\*

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FEW fields of medicine have undergone more rapid changes in the last few decades than that pertaining to diseases of the chest. Not so long ago inspection of the chest consisted of viewing it from the surface, but recently the field of man's vision has been greatly enlarged. He inspects the chest with the aid of the fluoroscope, the *x*-ray film and even looks into the trachea, bronchial tubes and some of their ramifications with the bronchoscope. Not being satisfied to look at the visible structures with the bronchoscope, he snips off a piece of the suspected tissue and prepares it for inspection under the microscope.

Palpation has been made more helpful since Pottenger and others have shown the relationship existing between rigidity or atrophy of the chest muscles and disease within the chest. Even percussion has become of greater value since Fetterolf pointed out the differences in relationships of various structures to the pulmonary apices on the two sides. Auscultation has advanced greatly through the comparison of auscultatory findings with those of the *x*-ray and post-mortem examination. Much of great value is being done to discard insignificant auscultatory signs.

We have learned that physical signs over the chest give us some information of what has occurred within the chest. They tell us very little of what is going on. There are certain signs over the normal chest which, when examining for disease, are extremely misleading and which even today are causing errors in diagnosis. For example: the differences in relations of anatomical structures to the apices of the lungs. Only since 1909 we have known these differences. On the right side the apex in many persons comes in direct contact with the trachea, while on the left side the apex is separated from the trachea by the subclavian artery. On the right side the superior vena cava and right innominate vein lie in front of the medial part of the apex. These

relations account for differences in the physical signs elicited over the apices of the lungs. In a fairly large percentage of persons the percussion note is slightly higher pitched over the right apex, tactile fremitus is increased, and whispered as well as spoken voice are definitely increased and the breath sounds are broncho-vesicular in character.

For a long time it was held that tuberculosis more frequently exists in the right than in the left apex. Prior to the days of the *x*-ray there was no way of confirming the physical signs except at the post-mortem table, and this did not make it possible in many cases to actually visualize the condition until it was far advanced and existed in both lungs. It is questionable whether a sufficiently large series of cases with stereoscopic films will prove that tuberculosis is any more common at the right than at the left apex. Therefore, in physical examinations we must always bear in mind the anatomical relations which bring about the differences in the physical signs elicited over the two apices.

Post-mortem, fluoroscopic and *x*-ray film examinations have shown that in a fairly high percentage of persons the diaphragm is somewhat higher on the right than on the left side. Moreover on the right side the liver lies immediately beneath the diaphragm. Because of this a higher pitched note is elicited over the right than over the left base. By the fluoroscope and *x*-ray film we have seen that on forced expiration the liver may extend as high as the fourth interspace. Therefore the phase of respiration must be taken into consideration when eliciting signs over the right lower chest.

We have learned to carefully inspect the chest for slight lagging since we know that when disease exists, even slight disease, the reflex protective mechanism may result in lagging of the movement of the chest wall. Often the diaphragm on the same side as the disease also lags, hence considerable evidence may be obtained from a study of the diaphragmatic shadow (Lit-

\*Presented before the Cass County Medical Society, Fargo, North Dakota, Oct. 23, 1926, and the Hennepin County Medical Society, Minneapolis, Jan. 18, 1928.

ten's sign). The same mechanism that brings about lagging of the chest accounts for spasticity of muscles over the surface of the chest when disease exists within. After the muscles have been in a state of contraction for a long period of time, atrophic changes occur and they seem flabby. The skin may also lose its subcutaneous fat. Therefore these facts aid us greatly in physical examinations.

We have learned that some of the auscultatory signs, such as slight changes in breath sounds, are far less important than we formerly believed them to be. By checking up with the laboratory and *x*-ray films, it has been possible to determine which of the auscultatory signs are really valuable. We know that whispered voice should be used in every case, since it gives valuable information concerning the condition of the lungs and the pleura.

Perhaps the most valuable contribution to our knowledge of auscultation is that of eliciting râles after the expiratory cough. One may listen carefully over a chest on normal or even deep breathing and elicit no râles whatsoever, but if the patient is asked to take a deep breath, exhale, and, just at the end of exhalation, cough, then take a deep breath, râles may be distinctly heard toward the end of inspiration. This is unquestionably our most valuable physical sign in the diagnosis of pulmonary tuberculosis as well as certain other pulmonary diseases. Fine râles are usually due to pneumonia while moderately coarse râles more often are present in tuberculosis.

Marginal râles have many times been mistaken for râles of disease. They are frequently heard over the lower axilla on either or both sides. At times they may also be heard above the clavicles when a subject has been employing shallow respiration and then takes deep breaths for the examination. After a few such breaths, however, these râles usually disappear.

Since the discovery of the tubercle bacillus perhaps nothing, except post-mortem examination, has contributed so much to our knowledge of chest conditions as the *x*-ray. In the beginning of *x*-ray development the pendulum swung too far in its favor, so far in fact that many physicians were willing to accept the roentgenologist's diagnosis and discard other valuable diagnostic procedures. A reaction later developed and the pendulum swung too far in the opposite

direction. Some physicians even yet are discrediting *x*-ray findings. There is no question that stereoscopic films should be made a part of every chest examination, although the present cost makes this impossible in many cases. They locate the lesion and give us some idea regarding its extent and they even determine something of its nature. By the use of the *x*-ray, it is sometimes possible to detect lesions before physical signs are present. Over lesions located rather remotely from the surface, it may be impossible to elicit physical signs; therefore, the *x*-ray in such cases gives the most valuable evidence.

We have learned much about the healing of tuberculosis through serial *x*-ray films. Healing by resolution is now known to occur and even tuberculous cavities have been followed to disappearance, facts of which we could not have been convinced a few years ago and without the use of the *x*-ray. In the past we have been too often satisfied with single films when stereoscopic films would have given us so much more information. We have also neglected films taken in the oblique position which help us to visualize the posterior mediastinum. When antero-posterior films fail, the oblique films may show us definite evidence of aortic aneurysm, definitely enlarged lymph nodes, small amount of fluid in the pleural cavity, foreign bodies in the trachea or the bronchi, etc. Pneumonia is diagnosed earlier and more frequently than it was in the past, since the *x*-ray often reveals deeply located areas of disease which cannot be detected by physical examination. By the *x*-ray we have learned that definite areas of pneumonia may appear and disappear in a few days without running what we formerly believed to be the usual course. Most of such cases would never be diagnosed except for this phase of examination. The *x*-ray examination must be regarded as a part of the general examination and as such I believe we are compelled to recognize it as second only to the finding of tubercle bacilli.

Considerable information in diagnosis may be had from the location of the pulmonary lesion. We usually say if it is located in the upper one-third of the lung it is most likely of a tuberculous nature; if in the middle one-third the chances of its being tuberculous or non-tuberculous are about equal; while if it is in the lower one-third it is most likely non-tuberculous.

Too often we neglect to consider that non-

tuberculous conditions such as bronchiectasis and lung abscess may exist in the upper one-third of the lung and also that tuberculosis may be present in the basal one-third. Indeed, basal tuberculous lesions are not as uncommon as many have been inclined to believe; therefore, while the location of the lesion is very helpful we must always seek for other evidence before arriving at a diagnosis.

Great strides have been made to advance our knowledge through various laboratory methods. With the splendid studies of normal tissues made by Bichat, followed very quickly by microscopic studies of diseased tissues by Virchow began the cultivation of a field which is yielding a rich harvest in diagnosis. Crude as it was in the beginning, laboratory work has led to one great contribution after another and has come to the point where it furnishes the best evidence in the diagnosis of certain diseases of the chest. Think of Klencke's experimental work followed by that of one of the most outstanding studies from the standpoint of results by Villemin. Without laboratory methods Koch could not have discovered the tubercle bacillus nor could Smith have isolated the bovine type. Without the laboratory, Gardner could not have so scientifically demonstrated the healing of tuberculous processes. Without the laboratory Baldwin, Brown, Petroff, Krause, Corper, Calmette, the National Tuberculosis Association Research Committee and many others could never have brought about such remarkable advances in our knowledge of tuberculosis and other diseases. How satisfying it is from the standpoint of diagnosis to take material from a patient into the laboratory and in a short time find unmistakable proof of the nature and often the cause of the disease. Without the laboratory methods we would still be groping about in the dark as physicians did for centuries before us.

Through the laboratory we have come to know that there are numerous nonpathogenic acid-fast bacilli which may be mistaken for tubercle bacilli. We know that in large laboratories specimens may be mislabelled and a positive report given to the wrong name. We know also that there are maligners who submit sputum from persons who they know are casting off large numbers of tubercle bacilli. We know that if a single sputum examination is found to be negative to tubercle bacilli it means absolutely nothing. Not

infrequently it is necessary to make large numbers of examinations; perhaps the fortieth or fiftieth will show tubercle bacilli after all the others have been negative. We know that the sputum is negative to tubercle bacilli in approximately two-thirds of the early cases of pulmonary tuberculosis. Women and children often will not expectorate. They swallow the sputum; therefore one has great difficulty in collecting a specimen sufficiently large for microscopic examination. In such cases a study of the fasting stomach contents or careful examination of the stool will often reveal tubercle bacilli. In the case of smaller children if mucus is present in the throat, one may secure enough for examination by using a tongue blade, causing the child to gag, and collect the sputum in this manner. If tubercle bacilli cannot be found by the usual microscopic examination plus the concentration methods, one should not give up but should inoculate laboratory animals such as the guinea pig. One should always seek for other pathogenic micro-organisms as well as tubercle bacilli. Not infrequently when one practises perseverance a diagnosis may be made through the laboratory examination which otherwise is extremely difficult or even impossible.

Elastic fibers in the sputum denote breaking down of tissue and their continued presence in the absence of tubercle bacilli aids in differentiating between tuberculous and nontuberculous lesions. The technic of staining elastic fibers employed by Prince of the Army Medical Museum is a distinct advance over the older methods.

A phase of the examination which is somewhat new, yet which already has greatly advanced our knowledge and which offers still greater possibilities, is inspection through the bronchoscope. In tuberculosis, bronchoscopic examination usually is not justified; however, in nontuberculous pulmonary conditions it is of tremendous help in diagnosis. Occasionally one finds a patient with cough and other annoying symptoms persisting over a considerable period of time, who has had the lungs examined by many physicians, all of whom were unable to find any evidence of disease. Bronchoscopic examination may reveal a small tumor mass extending into a bronchus or one of its ramifications, the treatment of which, if not malignant in character, relieves the patient of symptoms. Again one may find a stenosis of one of the larger rami-

fications, the proper treatment of which relieves the patient of discomfort. Again, one may find a foreign body previously unsuspected and which does not cast shadows on the x-ray picture. There are many cases of pulmonary and bronchial conditions with questionable diagnoses in whom bronchoscopic examination suffices to clear up the diagnoses. During this examination the removal of a bit of tissue from the area of disease for microscopic study is easily done, is harmless to the patient, and is a tremendous aid to the physician. Through this method we are beginning to realize that primary carcinoma of the bronchi and lungs is more common than we had ever imagined. A number of patients with the physical and x-ray findings which have seemed to justify diagnoses of tuberculosis are found by this method to be suffering from carcinoma. The studies of Jackson, Funk, Lemon, Vinson and Moersch, Archibald and others have already demonstrated that bronchoscopic study is one of our most valuable aids in the diagnosis of questionable bronchial and pulmonary conditions.

A great wave of enthusiasm has recently spread over the medical profession regarding the introduction into the bronchial tree of substances opaque to the x-ray such as iodized oil. Several methods have been devised for introducing them. Some believe they are best introduced by inserting a needle directly through the skin and into the trachea (intercricothyroid, infraglottic or subglottic method). Others pass the tip of a cannula between the vocal cords and into the trachea and through this inject the opaque substance (transglottic method). Others believe it is sufficient to cocaine the larynx and adjacent structures, then have the patient swallow the substance (deglutition method). In this way they feel that enough passes into the trachea and bronchi to make the examination satisfactory. When a fistula exists through the thoracic wall it is possible to introduce iodized oil through it (transthoracic method). The method (supraglottic) fully described by Pritchard is perhaps the one most commonly used in this country at present. He attaches a cannula to a metal syringe and through this introduces the iodized oil against the under surface of the epiglottis, whence it flows through the open glottis into the trachea. Still others prefer to use the bron-

choscopic method, which consists of introducing the iodized oil through a bronchoscope.

Archibald, Belote and others have issued words of warning against the indiscriminate use of opaque substances in the bronchial tree. Some believe that such opaque substances should almost never be injected until a bronchoscopic examination has been made and then if one must resort to the use of these substances they should be injected through the bronchoscope because in many instances one is able through the bronchoscopic examination to arrive at a more satisfactory diagnosis. Moreover, it is possible when opaque substances are injected to more thoroughly cocaine the structures and this most certainly facilitates the introduction of the substances into the proper place. In the beginning the over-enthusiasm for the use of iodized oils perhaps caused the pendulum to swing too far in their favor. It was stated that they are quickly absorbed and disappear. Perhaps they usually do, but one occasionally sees patients who have large quantities remaining months after its introduction.

The splendid experimental study of Fried and Whitaker represents the kind of work which must be done before we know as much as we should about the use of iodized oils, both as diagnostic and therapeutic procedures. Their summary and conclusions are as follows:

"Iodized oil injected into the lungs of cats by way of the trachea is well tolerated when the amount does not exceed 1.55 c.c. per kilogram of the animal's weight."

"The oil remains in the lungs for long periods; in a number of cases, animals killed four months after injection showed the presence of this substance in the air sacs."

"In a few instances, iodized oil was injected into the lungs of cats with a respiratory infection (snuffles). These animals got rid of the oil much quicker than the healthy cats. This may be explained on the supposition that the animals with 'snuffles' squeezed the oil from the lungs into the pharynx by sneezing, from whence it was swallowed."

"The pulmonary reaction stirred up by the oil in the lungs is confined to the cells 'lining' the alveolar wall, commonly spoken of as the respiratory epithelial cells. These cells, being normally macrophages in a resting state, transform themselves under the influence of the introduced oil into wandering phagocytes devouring the oil and storing it in their cytoplasm as fine and coarse granules. These cells likewise proliferate, forming large cellular masses resulting in localized destruction of the normal pulmonary structure."

"In none of the forty-four cats used did the iodized oil lead to sclerotic changes in the lungs."

There can be no doubt that the use of iodized oils is of great help in the diagnosis of some cases, but since it cannot be eliminated as readily as opaque substances introduced into the gastrointestinal tract, since it remains for days, weeks and sometimes months, thus rendering almost impossible further satisfactory examinations during this time, and since it apparently has caused definite harm in some cases, it should be used, at least until we know more about it, only in those cases in whom all other methods have failed us in arriving at a diagnosis.

Some quite remarkable revelations have recently been made regarding nontuberculous diseases of the lungs and bronchi. A close relationship has been found to exist between disease of the paranasal sinuses, teeth, etc., and some cases of bronchiectasis, lung abscess, etc. Indeed, Smith, who has made a very careful study of this subject, says:

"Clinical, bacteriological, pathological and experimental studies indicate that pulmonary gangrene, most cases of pulmonary abscess, certain types of unresolved pneumonia and bloody bronchitis, putrid bronchitis and primary bronchiectasis are not separate disease-entities but only different manifestations of infection with a specific group of anaërobic microorganisms."

"*Treponema microdentium*, *Treponema macrodentium*, and two types of fusiform bacilli have been isolated in pure culture from the washed pulmonary sputum."

This recent change in our views concerning such diseases has already been of great value in their treatment and promises to be of still greater value in their prevention.

We have learned that in childhood (between the second and third years and the eleventh and twelfth years) the tuberculosis picture is entirely different from that which we see earlier in life or that usually seen after the age of puberty. During this period of childhood the disease often involves only the lymph nodes; therefore it is a mistake to look for disease only in the lung, as in the adult. One may examine a child extremely carefully, find no evidence of disease in the lungs, when it is present in abundance in the tracheo-bronchial lymph nodes. In the examination for disease in these nodes, physical findings are of little avail; D'Espine's sign, Eustace Smith's sign, interscapular dullness and others which at one time were thought to be of considerable significance are, in the light of our present knowl-

edge, of little or no value. In such cases stereoscopic  $x$ -ray plates are indispensable. In the past these cases were overlooked unless the lymph nodes became extremely large. In other words, many cases that could have been benefited by treatment were not recognized.

When the Von Pirquet (epidermal) and the Mantoux (intra-dermal) tests were announced, enthusiasm ran high and the pendulum swung too far. Many persons perfectly normal were placed on treatment for tuberculosis merely because they reacted positively to these tests. Then it was shown that the test was not indicative of tuberculous disease but only of tuberculous infection. It was then believed that everyone who had ever been infected with tubercle bacilli would react positively. A positive test in children less than one year of age was sufficient evidence to justify bad prognosis. Then it was believed that the test was of no value except in children. We have learned, however, that a positive cutaneous tuberculin test in a child under one year old, by no means, warrants a bad prognosis, unless the child has actually become diseased. No doubt many children of this age handle tuberculous infection well. Since we have learned that tuberculosis in the adult is not always the result of tuberculosis in childhood, that infection is not universal but that grown people may become infected, it is obvious that a cutaneous tuberculin test is not without value in adults. For example: a patient comes to a physician's office for a complete examination. Among other things, the physician should determine not only whether tuberculous disease exists but also whether tuberculous infection exists. If infection is not present, the patient may return in six months for a periodic examination. He may then be showing mild symptoms although the examination reveals no evidence of disease. If a cutaneous tuberculin test is applied at this time and it is found to have become positive, most certainly it is of great value. Could it be of any greater value in the case of the infant or the child? It is a test that should be applied routinely, not only through infancy and childhood, but throughout adult life.

We have rather recently learned that after all, perhaps, the greatest number of mistakes in diagnosis of lung diseases is due to our failure to make careful systematic examinations on all of our patients. If a patient presents himself for examination, looks well and does not complain

of very definite symptoms, there is a tendency to consider his case lightly and make only a cursory examination. It is the patient with slight disease that presents the greatest difficulty in diagnosis. It is this patient whose disease most often is not detected; yet it is this patient in whom the best results can be obtained from treatment after the disease is detected.

In the diagnosis of pulmonary disease there are certain diagnostic points which are of considerable significance and which suffice in the diagnosis of the majority of cases. For example: in pulmonary tuberculosis, Brown has given us five points: (1) the presence of tubercle bacilli; (2) moderately coarse râles above the second rib and the third spine; (3) parenchymal shadows above the second rib and third spine; (4) pleurisy with effusion; and (5) hemoptysis. When a tuberculous lesion is detected, the question arises as to whether it is an old process that is no longer of any clinical significance or whether it is an active progressive process of present clinical significance. The large number of examinations made during and after the world war taught us much regarding the presence

of lung lesions in apparently healthy young men. Many who had never been ill were found to have definite x-ray shadows in one or both lungs and during the subsequent years of observation they have not been ill.

The clinical activity of a tuberculous lesion is determined ordinarily by the presence of symptoms; therefore many patients require a period of careful observation before one is justified in making a definite statement regarding the activity of the lesion.

In tuberculosis of the lung hilum which is so common in children, Hawes and Chadwick have aided us greatly in diagnosis. The following points are of great help: (1) positive cutaneous tuberculin test; (2) a definite history of exposure to tubercle bacilli; (3) the presence of constitutional signs and symptoms; (4) the presence of enlarged bronchial nodes revealed by the x-ray; (5) the absence of other evident sources of infection or toxemia. Before arriving at a diagnosis, points one and four must be present; the other points are important but not as essential to the diagnosis.

## SURGERY IN PREGNANCY\*

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**I**N the few cases I have had in which I felt that surgery was indicated in pregnant women I have been impressed with their reaction to both anesthesia and major surgical procedures. All made uneventful recoveries and in none of them was the pregnancy interrupted.

In what way, if any, do the physiology and metabolism of the normal pregnant woman differ from the non-pregnant?

In an article by Harding in the *Physiological Review* of January, 1925, and from Williams *Obstetrics* we glean the following:

*Urine.*—The urine in normal pregnancy is identical with that of the non-gravid woman under similar conditions, with the exception of the occurrence in it of creatine in the later months. A pregnant woman excretes less nitrogen on the same diet than the non-pregnant control, less urea and hence a larger percentage of ammonia and creatinine. This is because of the nitrogen gains which are made in pregnancy. Williams says that slight nephritic symptoms are so common that the Germans speak of the kidney of pregnancy. The ureters are sometimes compressed, frequently producing a pyelitis or pyelonephritis. The bladder is pushed to the right in 90 per cent of pregnancies.

*Blood.*—The blood shows an increased hydration as shown by a decrease in specific gravity. This is associated with a decrease in hemoglobin and red cell count. A leukocytosis occurs just before labor. The level of the blood calcium is little if any disturbed. Fibrinogen nearly doubles. Glucose remains unchanged although the majority of pregnant women to whom 100 grams of glucose was given showed an increase in blood sugar.

*Basal Metabolism.*—Basal metabolism shows an average increase of about 4 per cent. Nitrogen is stored up.

*Ductless Glands.*—Moderate hypertrophy of the thyroid is present in 65 to 90 per cent of all cases. Williams says it is generally admitted

that the parathyroids show a considerable hypertrophy. The anterior lobe of the hypophysis hypertrophies during pregnancy and returns to normal afterward.

*Heart.*—There is a probability that cardiac hypertrophy occurs and is most marked in the later months of pregnancy and disappears during the puerperium.

*Blood Pressure.*—Hare<sup>3</sup> studied a series of pregnant women with reference to blood pressure and the effect on the heart of exercise. His conclusions were that there was but little variation between the pregnant and non-pregnant. Return of the pulse to normal during the first three months of pregnancy was slightly slower than normal; in the fourth month the heart was slightly more irritable. Blood pressure throughout was on the low side of normal.

*Respiratory Tract.*—Three-fourths of pregnant women show a reddening and edema of the false vocal cords and of the interarytenoid region.

*Digestive Tract.*—One-half of all pregnant women suffer from constipation. The liver is in a state of unstable equilibrium. Some writers speak of the liver of pregnancy and describe the appearance of fat in the cells of the central portion of the lobules, the reduction of glycogen and the dilatation of the central veins, the biliary channels and the afferent capillaries. These statements of liver changes are not substantiated by other writers.

*Skeleton and Teeth.*—The demands of the growing fetus for calcium salts are so great that if there is a deficiency of this element in the food of a pregnant woman, the fetal demands are supplied by the woman's bones and teeth. For this reason the old expression "for every child a tooth" was used.

Williams classes under the nervous system the various food cravings, changes in disposition and the neuroses. Generally speaking, gestation is characterized by improved health.

Williams says of surgery in pregnancy: "Whenever a condition arises in the pregnant

\*Presidential address presented before the Ramsey County Medical Society, St. Paul, Feb. 27, 1928.

woman which imperatively demands surgical treatment, the necessary operation should be performed without hesitation. At the same time if the indication is not pressing, it is advisable to defer interference until after delivery so as not to subject the patient to an added strain."

Greenhill<sup>12</sup> designates the time in which a woman would menstruate if not pregnant as the vulnerable time and advises that any operative procedure be avoided at this time. The literature on operations during pregnancy is voluminous. Let us consider some of the more common ailments in which surgery may be indicated.

*Appendicitis.*—Benjamin<sup>4</sup> says the same rules apply in pregnancy as in its absence and this seems to be the general consensus of opinion. The menace to life in case of rupture of the appendix is far greater in the presence of pregnancy. Carstens<sup>5</sup> reported three cases of rupture with two deaths.

*Ovarian Cyst.*—Graefe<sup>6</sup> reports 178 cases of ovariectomy during pregnancy with a maternal mortality of 2.3 per cent, and pregnancy interrupted in 16 per cent. Ovarian tumors produce abortion in 17 per cent if not operated. The most common cause of trouble with ovarian tumors during pregnancy is twisting of the pedicle.

Fellness, after a study of 519 articles on operations during pregnancy, states that unilateral ovariectomy during pregnancy resulted in its interruption in 20 per cent of the cases; bilateral in 21.6 per cent.

*Miomata.*—Donaghue<sup>7</sup> contends that the treatment should be governed by conditions existing in the individual case. A pedunculated fibroid with a twisted pedicle may create a surgical crisis. With a fibroid obstructing the birth canal, delivery should be by cesarean section.

Litzenberg<sup>13</sup> says that therapeutic abortion has no place in the management of such cases—that myomata should be removed surgically if discovered early and it is believed that their presence will prevent delivery—otherwise the patient should be delivered by cesarean section. He says the incidence of abortion following myomectomy is but 15 per cent and that by the use of great care and extreme gentleness of manipulation this figure can be still further reduced. Also that the mortality of cesarean section followed by hysterectomy during labor is twice as high as though done prior to the onset of labor. In concluding he says, while myomata in the pregnant uterus

are common, they seldom dangerously complicate pregnancy, labor or the puerperium and still less often require surgical interference. However, a few cases require operation on account of size, rapid growth, location in the lower segment, incarceration in the pelvis, pressure symptoms, threatened abortion or when accompanied by a contracted pelvis. Fibroids tend to increase greatly in size during pregnancy and to become greatly reduced in size following delivery. This is illustrated by a personal case. One of our surgeons removed the appendix of a woman during the early months of her first pregnancy and at the time discovered a small fibroid at the fundus which he let alone. At the time I delivered her the fibroid was the size of a bantam's egg. Some weeks later it was scarcely palpable. At her second delivery three years later there were three tumors the size of bantam's eggs. Some months later they were scarcely palpable.

Mayo Robson<sup>8</sup> as far back as 1896 reported eleven operative cases complicating pregnancy as follows:

Myoma of cervix.....	1
Carcinoma of breast.....	2
Ovarian cysts.....	2
Ovarian cyst with twisted pedicle.....	1
Strangulated femoral hernia.....	1
Hemorrhoids .....	1
Hemorrhoids and anal fissure.....	1
Compound comminuted fracture of the leg..	1
Cholecystotomy .....	1

In none of these cases was pregnancy interrupted.

Meek<sup>9</sup> of London reported a case of a splenectomy on account of a twisted pedicle in a woman four months pregnant. Convalescence was normal and the woman was delivered normally at full term.

Noble<sup>10</sup> says it has been necessary to operate upon pregnant women many times and they are not apt to abort. The fear of bringing on abortion by operation on other parts of the body is not correct.

#### CASE REPORTS

*Case 1.*—A patient upon whom an appendectomy necessitating drainage had been done by me three years previously had a postoperative hernia repaired when three months pregnant. Operation was performed under ether anesthesia with cure of the hernia and delivery at full term.

*Case 2.*—The patient, referred by Dr. Walter Brodie, was seen with an acute abdomen when six weeks preg-

nant. An acute appendix and an unruptured right tubal pregnancy were found and the appendix and tube removed. Convalescence was uneventful and the patient was confined at full term by Dr. Brodie. The puerperium was complicated by a severe phlebitis.

*Case 3.*—This patient, a very large woman six months pregnant, was referred by Dr. Bohland with a carcinoma of the breast of three months' standing. A biopsy under gas anesthesia was followed by a complete breast amputation with an incision two feet long. A raw area 3 by 2 inches which through sloughing increased in size to 3 by 6 inches was left to heal by granulation. Beck's method of covering the periphery of the granulating area with sterile adhesive led to complete healing in six weeks. The patient was delivered at full term by Dr. Bohland. She lived four years, with no sign of local recurrence, but presented signs of carcinoma of the lungs at the time of her death.

*Case 4.*—This case was an instance of error in diagnosis. The patient, a young primipara two months pregnant, was taken suddenly with pain, tenderness and rigidity in the lower right quadrant of the abdomen, chills and an elevation of a degree and a half in temperature. There was slight leukocytosis and the urine examined on admission to the hospital was reported normal both chemically and microscopically. The same evening a small shrivelled appendix was removed and at operation no evidence of other trouble found. The following day pus was found in the urine. In this connection I wish to quote an article in *British Medical Journal* of March, 1926:<sup>11</sup>

"The pyelitis or pyelo-nephritis of pregnancy is often a puzzling condition which may simulate an acute abdominal emergency, and has been the cause of many an innocent appendix suffering unjustly the extreme penalty of the law. It may arise with suddenness and is most common on the right side, next bilateral, and least common on the left side. It is associated with tenderness and rigidity over the appendix area and with abdominal distention and flatulence. It may begin with a rigor and sudden rise in temperature and pulse rate usually after the fourth month and most frequently about the sixth month. It is most common in primipara. It may or may not be associated with nephritis. The diagnosis depends largely on the recognition of the pyuria and bacilluria, usually due to the colon bacillus and the tenderness in the loin and costovertebral angle. Similar tenderness in the loin may also be present with a retrocecal appendix, but the higher degree of fever with a relatively good pulse and general condition helps to distinguish it from appendicitis or other cause of local peritonitis."

*Case 5.*—A primipara, aged 17, about two months pregnant was operated upon under local anesthesia, reinforced with a little gas and ether, for acute appendicitis. Convalescence was uneventful.

*Case 6.*—A young woman, twenty-six years of age, some three months along in her third pregnancy had a chronic type of appendix removed. On section of the appendix twelve pin worms were removed from the lumen.

In none of the six cases cited was pregnancy interrupted. The breast case showed far more rapid healing by granulation than would ordinarily be expected.

#### CONCLUSIONS

1. A physiological study shows surprisingly little difference between pregnancy and non-pregnancy.
2. During pregnancy any septic areas from which the lymphatics communicate with the broad ligaments or the uterus are a grave menace to life.
3. Any operative procedure on the uterus itself involves a 15 per cent chance of interrupting the pregnancy.
4. Surgical procedures which exclude the two above conditions may be entered upon with a fair degree of safety both as regards the mother and the unborn child.
5. All tumors tend toward rapid growth during pregnancy.

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# SOME MALFORMATIONS OF THE UTERUS WITH REPORT OF THREE CASES\*

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THE anomalies of the uterus are a relatively rare condition, and yet they are encountered sufficiently often to warrant their consideration. A great many cases probably go through life undiagnosed, some are not recognized until abdominal section is undertaken, while others become of importance during the course of an obstetrical delivery, often causing serious complications.

## EMBRYOLOGY

The female reproductive organs are formed by the union of the two Müllerian ducts, which arise from the Wolffian bodies. These ducts fuse from below upwards; the caudal ends come together to form a single medial tube which later becomes differentiated into the uterus and vagina; the cephalic ends become the Fallopian tubes and oviducts. Fusion into one medial canal, the anlage of the uterus and vagina, becomes complete between the eighth and twelfth week of fetal life, while about the fifth month of fetal life the upper portion of the tube becomes differentiated into the uterus and the lower portions into the vagina. The growth of the uterus from birth until puberty is exceedingly slow; by the age of eighteen years it usually attains the maximum size of a virgin uterus measuring about 7 centimeters.

Any defect of fusion of the caudal ends of the Müllerian ducts at any point will account for almost all the congenital anomalies; the lack of fusion usually results in some degree of reduplication, while a complete lack of fusion would result in a complete reduplication of the generative organs. A rudimentary development of only one duct will account for the remainder of the anomalies.

## CLASSIFICATION

The most commonly recognized types of uterine malformation, according to the classification of von Winckel<sup>1</sup> are as follows:

1. Uterus didelphys or duplex: a complete reduplication of parts with no connection be-

tween either side, that is, a double uterus and double cervix associated either with a double or single vagina. Each uterus possesses only one tube and ovary. Pregnancy could then occur independently in either half of the uterus.

2. Uterus bicornis: the two halves of the uterus are united to some extent in their lower portion but remain divided at the fundus into two distinct cornua. There may be two cervices (uterus bicornis bicollis) or, as is most often the case, one common cervix (uterus bicornis unicollis).

3. Uterus septus: a division of the uterus into two distinct cavities often not recognized externally except by the unusual breadth of the corpus. When the septum reaches to the internal os, it is known as uterus septus unicollis; when the septum reaches only part way to the internal os, it is known as uterus subseptus unicollis.

4. Uterus unicornis: the development of only one horn of the uterus with the opposite tube and ovary missing or coming off the lower portion of the uterus. There is an intermediate type called uterus unicornis with a rudimentary horn, a type in which one horn is completely developed and the other incompletely or rudimentary and often closed off from the main uterine cavity.

5. Uterus Foetalis, Pubescens, Rudimentarius, and Defectus: Underdeveloped and infantile type of uterus ranging to almost complete absence of the uterus.

## CASE REPORTS—LIPIODOL INJECTION

There were three cases of uterine anomalies encountered at the Minneapolis General Hospital in the past year. Two were of the uterus bicornis unicollis type and were very similar as to their clinical findings and treatment, both occurring with full term pregnancies. The complications of these two cases occurred mainly in the third stage and were characterized by a retained placenta with uterine hemorrhage necessitating the manual removal of the placenta. The third one was of the uterus septus unicollis type and was discovered at operation, at which time a

\*From the Obstetrical & Gynecological Service of Dr. F. L. Adair at the Minneapolis General Hospital.

complete hysterectomy was done. The cases follow in detail.

*Case 1.*—Uterus Bicornis Unicollis. A white married woman, aged 27, was admitted to the Minneapolis General Hospital in the second stage of labor on November 18, 1927. The past history with the exception of her pregnancies was negative. The menses were established at the age of fourteen, always regular, of the twenty-eight days type, duration five days, and unaccompanied by pain. The date of the last menstrual period was February 6, 1927, with the expected date of confinement November 13, 1927. The present pregnancy had been entirely uneventful; there had been no prenatal care.

The patient's first pregnancy occurred in 1921, terminating in a premature seven months stillbirth, the pregnancy being complicated by eclampsia with convulsions. The second pregnancy in 1925 was normal, resulting in the spontaneous delivery of a normal healthy full term child. There were no complications of the third stage in either labor.

The patient was admitted after having been in active labor for fifteen hours. The membranes had been ruptured several hours, the cervix was completely dilated and effaced, an arm and a feebly pulsating umbilical cord were prolapsed. No fetal heart could be obtained and the pulsation of the cord ceased in a few minutes. A diagnosis of right scapular posterior position complicated by prolapse of an arm and the cord was made. A podalic version and extraction of a 645 gram stillborn baby measuring 56 cm. crown-heel was then done.

The placenta did not separate in the usual half-hour and Crede expression was unsuccessful. At this time the two halves of a bicornate uterus could easily be palpated through the abdominal wall. Two hours after delivery of the baby the pulse rose to 140 and the blood pressure dropped to 78/50. Under anesthesia a manual removal of the placenta was then easily done. The two uterine horns could be distinguished with the gloved hand, each horn presenting a separate hollow cavity. There was no definite septum between, the separation apparently being maintained by an invagination of the uterine wall in the midportion of the fundus. The placenta was attached to the horn and wall of the left side; the right horn was smooth and entirely empty. The uterus immediately contracted down and bleeding ceased following the removal of the placenta. The placenta weighed 550 grams, the cord measured 90 cm. in length and was eccentrically attached.

The patient was treated for hemorrhage; there was no shock. Eight hours later the pulse was 94, the blood pressure 114/78 and the general condition satisfactory.

On the second day a chill occurred, the temperature rose to 104° and the pulse to 130. The patient then went through a markedly febrile reaction with the temperature ranging between 99-104°, the pulse 90-140, and the W.B.C. 11,350-13,500. Treatment consisted of general supportive and stimulative measures, fluids, and two blood transfusions of 300 c.c. each. By the tenth

day the temperature was normal and from then the convalescence was rapid, the patient being discharged in good condition on the twenty-first day post-partum.

Three months after delivery she was again examined and showed no signs of any residual pelvic inflammation. The uterus was completely involuted, in first



Fig. 1. Lipiodol injection of a multiparous uterus in first degree retroversion; note the normal contour of the uterus and the patency of the tube.

degree retroversion, and the two horns of a bicornuate uterus could just be made out.

A lipiodol injection of the uterus and tubes was done at this time and clearly demonstrated the bicornate condition with the uterus completely involuted. The accompanying stereoscopic x-ray reductions illustrate the condition found. With the cannula in the right horn the lipiodol solution passed readily into the left horn. The right horn filled slightly better than the left. Both tubes were apparently occluded, the lipiodol failing to pass into the peritoneal cavity at 3 hours or 12 hours.

*Case 2.*—Uterus Bicornis Unicollis. This case has already been fully reported by R. E. McDonald. The patient was a primipara, aged 19, admitted June 18, 1927, in the first stage of labor. A spontaneous delivery of a normal full term infant occurred after seventeen hours of labor. Profuse bleeding started soon after delivery and the placenta could not be ex-

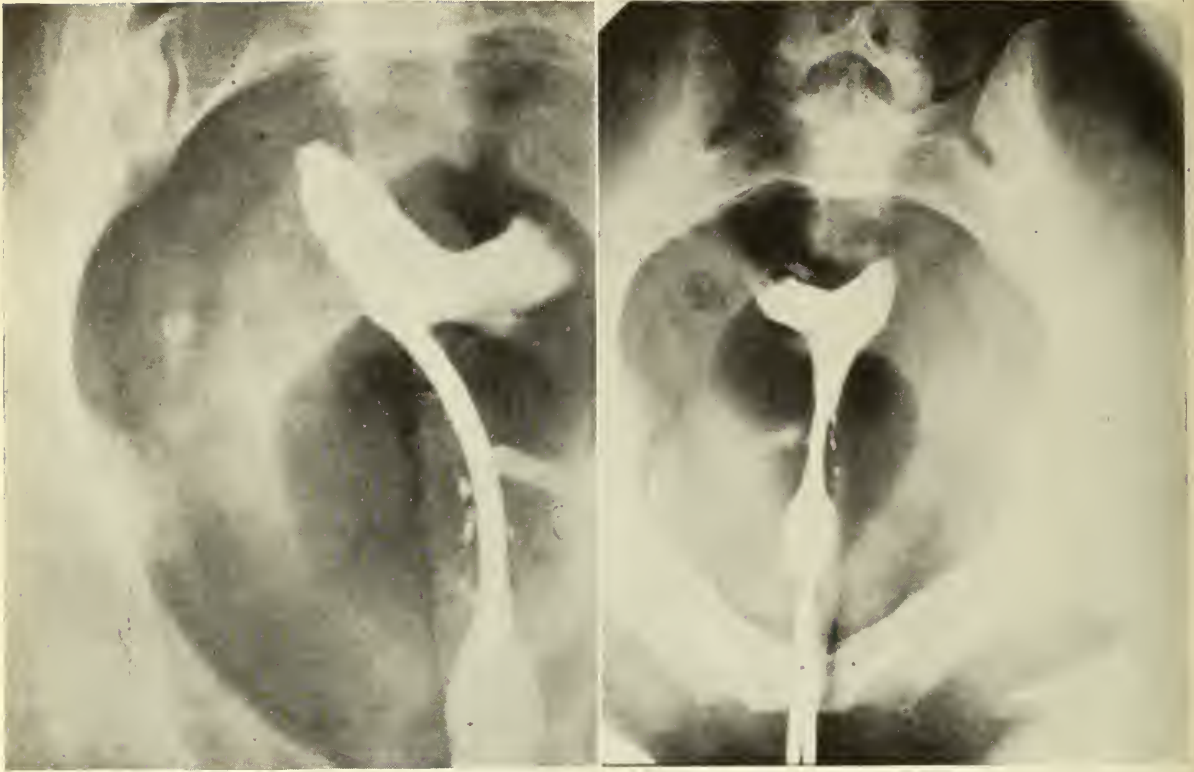


Fig. 2 and Fig. 3. Stereoscopic views following the lipiodol injection of a bicornate uterus in the completely involuted state and in first degree retroversion. Note the two distinct uterine horns and the occlusion of both tubes. Case 1.

pressed by the Crede method. The hemorrhage within one hour became marked enough to be alarming. It was then necessary to resort to a manual removal of the placenta. A bicornate uterus similar to that of Case 1 was then found. The placenta was attached along the right cornu and right uterine wall; it was easily removed.

There was a markedly febrile reaction for the first four days; recovery was otherwise normal and the patient was discharged on the fourteenth day post-partum. Examination at this time showed a fairly well involuted uterus in which two distinct horns could be outlined.

**Case 3.—Uterus Septus Unicollis.** The case is that of a married woman, aged 52, who had had five perfectly normal and spontaneous full term confinements with no complications in either the second or third stage. The menses were established at the age of thirteen, always regular of the twenty-eight days type, and unassociated with any pain. The normal menopause occurred at the age of fifty.

In April, 1927, following an automobile accident, vaginal bleeding started and continued for one month becoming quite profuse. A curettement stopped the bleeding temporarily. Again in the latter part of January, 1928, vaginal bleeding started and continued up to the time of her admittance on February 25, 1928. There was no watery or foul discharge and no pain.

The general physical condition was excellent. Pel-

vic examination revealed a first degree laceration of the cervix with cystic degeneration but no ulceration or erosion. There was a moderate sanguinous discharge apparently coming from the corpus. The corpus was in an anteverted position, about one and one-half times the normal size, and contained what was thought to be a moderate sized fibroid in the right horn and a similar one in the left.

A diagnostic curettage was done to rule out the possibilities of malignancy. On introducing the curette it was deviated towards the right by what was thought to be a submucous fibroid occupying the left half of the uterus. Microscopic examination showed a benign hyperplasia of the endometrium. A pre-operative diagnosis of multiple fibromyomata uteri and hyperplastic endometritis was made and a complete hysterectomy rather than radium decided upon.

At operation it was impossible to decide whether the condition found was a bicornate uterus or multiple fibromyomata of each uterine horn. Accordingly a complete hysterectomy was carried out as planned. After removal, both horns were found to be equal in size and symmetrical. The uterus measured 11 cm. from the midportion of the fundus to the external os, and 7 cm. in the transverse diameter at its widest portion. On opening the uterus there were found two distinct cavities, one coming from each horn and joining the cervix at the region of the internal os. No evidence of fibromyomata was found. The cavities were



Fig. 4. Uterus septus unicollis; external view after complete hysterectomy. Case 3.

separated by a wide septum reaching to the internal os. Each cavity measured 1.2 cm. in width and the cervical cavity 1 cm. The distance from the internal os to the apex of the right cavity was 4.3 cm. and to the apex of the left cavity 4 cm. The septum at its widest portion near the fundus measured 3 cm. The patient made an uneventful recovery, being discharged from the hospital on the sixteenth day post-operative.

#### SUMMARY

1. Two cases of uterus bicornis unicollis with full term pregnancy necessitating manual removal of the placenta are presented.
2. One case of uterus septus unicollis removed at operation is presented.
3. One case of uterus bicornis unicollis visualized by lipiodol injection is shown.
4. The future possibility of making more accurate and earlier diagnosis of bicornate uteri and other associated anomalies by lipiodol injection is suggested.
5. The complications of the bicornate uterus occur mainly at the time of delivery and in the



Fig. 5. Uterus septus unicollis; midtransverse section demonstrating the two distinct uterine cavities divided by a wide septum. Case 3.

third stage. These should be watched for and treated accordingly; cesarean section should only be done when definitely indicated; manual removal of the placenta should be resorted to whenever marked uterine hemorrhage with retention of the placenta occurs and after other methods have failed.

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## IRRITABLE BLADDER IN WOMEN\*

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THE term "irritable bladder" is applied to disturbances of bladder function marked by the following symptoms: pain or abnormal sensation referred to the bladder or urethra; constant or abnormally frequent desire to void; frequency of urination; and burning or painful urination. Any or all of these symptoms may be presented by a particular case. In a very mild case there may be nothing more than a little itching discomfort referred to the urethra and bladder, probably associated with an abnormally frequent but not compelling desire to void, the actual voidings no more frequent than normal. In the more severe cases there is constant pain referred to the bladder neck and urethra, an almost constant and severe desire to void which compels voidings every few minutes and is marked by severe urethral burning and is followed by terminal tenesmus. Between these two extremes the cases present various degrees of urinary symptoms. The usual clinical picture is that of a decided shortening in the interval between day voidings accompanied by discomfort in the region of the bladder associated with a desire to void, and more or less nocturia. In mild cases there is great annoyance; in severe cases, incapacity.

Bladder irritation in women has not received the attention it deserves. In the past the condition even though severe occasioned no alarm, very casual interest, and no careful investigation. It was expected that all married women, particularly those who had borne children, would have some degree of trouble with urination. With the development of urologic methods of investigation it has been found that bladder irritation is frequently the first manifestation of serious urinary tract disease. In spite of this, entirely inadequate examination and empirical treatment continue. Striking symptoms such as flank or abdominal pain, typical colic, or fever may provoke proper investigation but in most instances examination of the urine is the extent of the

diagnostic study. When pus cells are found these cases are promptly labeled "cystitis" and routinely treated by urinary tract antiseptics and daily bladder lavages. In most cases improvement following this régime is short lived or does not occur.

The normal bladder is resistant to infection. It will permit cystoscopy and catheterization without ill effect and may pass out large numbers of bacteria in the urine and escape involvement. When primarily infected, with a few exceptions, the effects are transitory and healing is spontaneous. Lesions secondary to disease elsewhere in the urinary tract tend to heal rapidly following cure of the extra-vesical disease. The distressing bladder symptoms accompanying renal tuberculosis disappear following early nephrectomy. When operation is performed after anatomic change has occurred in the bladder the irritation persists. The resistance of the bladder to primary infection should preclude the snap diagnosis of simple cystitis without proper investigation to exclude the commonly present, more significant conditions. This investigation should be made promptly. Appropriate treatment can then be undertaken before the pathologic change becomes so far advanced that it will maintain a continued irritation after the primary cause is removed.

In accordance with the classification here submitted, cases of bladder irritation in women may be divided into those in which pathologic changes occur in the bladder, and into those cases in which there are no actual bladder lesions. The bladder condition is primary when due to lesions beginning in the bladder. It is secondary when caused by lesions first involving other organs of the urinary tract or adjacent structures of the pelvis. These secondary bladder lesions are temporary when they have caused little or no anatomic change and heal promptly following cure of the extravescical disease. They are permanent when they have produced anatomic changes in the bladder which remain even though the original cause is removed. The le-

\*Read before the Ramsey County Medical Society, St. Paul, Minnesota, Feb. 27, 1928.

sions responsible for irritable bladder in women may be classified as follows:

CLASSIFICATION OF IRRITABLE BLADDER IN  
WOMEN

- I. *Cases with Bladder Lesions*
  - A. Bladder Lesions Primary
    1. Acute Cystitis
    2. Foreign Bodies
    3. Submucous Cystitis
    4. Fenwick Ulcer
    5. Neoplasm
    6. Diverticulum
  - B. Bladder Lesions Secondary to Extra-vesical Disease
    1. Temporary Lesions (heal following removal of the cause).
      - a. Cystitis.
        1. Upper tract infections
          1. Pyelonephritis
          2. Pyonephrosis
          3. Lithiasis with infection
          4. Renal tuberculosis
        2. Lower tract infections
          1. Urethritis, gonorrheal
          2. Urethritis, non-gonorrheal
        3. Pelvic inflammatory disease
      2. Permanent Lesions (may not heal following removal of the cause).
        - a. Chronic Cystitis
        - b. Tuberculous Cystitis
        - c. Vesical Calculus
        - d. Alkaline Encrusted Cystitis
        - e. Leukoplakia
        - f. Contracture of the Vesical Neck
        - g. Polypi of the Bladder Neck
- II. *Cases Without Bladder Lesions*
  - A. Disturbance of Innervation
    1. Tabes Dorsalis
    2. Pernicious Anemia
    3. Multiple Sclerosis
    4. Transverse Myelitis
  - B. Reflex from the Ureter
    1. Ureteral Stone
    2. Ureteral Stricture
    3. Other forms of Ureteral Obstruction
  - C. Chemical Irritants
  - D. Food Allergy
  - E. "Nervous" Bladder

This classification serves as a synopsis and outline for what follows.

PRIMARY BLADDER LESIONS

Bladder irritation the result of primary acute cystitis is occasionally seen. The etiologic factors are often various types of trauma such as catheterization, the use of strong solutions for bladder instillations and lavages, alcoholic excesses, difficult labor, prolonged exposure to cold, and certain operative procedures on neighboring viscera demanding dissection of the bladder. In some cases none of these factors are responsible and there is a spontaneous inflammatory process involving the bladder mucosa. It is probable that these are either the result of excretion of organisms through a healthy kidney or their ascent through the urethra, or to embolic hematogenous infections. The pathologic change is that of acute inflammation usually limited to the mucosa. Diagnosis is not difficult, the condition is temporary, and rapid recovery is the rule.

Foreign bodies may be accidentally introduced into the female bladder during instrumentation or during masturbation. Little or no trouble is encountered until the object impinges on the internal meatus, when edema and congestion of the mucosa of the trigone and vesical neck occur and more or less irritation results. Cystoscopy demonstrates the foreign body and all symptoms disappear following its removal.

Submucous cystitis, also called panmural fibrosis, elusive ulcer, or Hunner ulcer, is a primary bladder disease and a cause of severe bladder irritation. The etiology is not fully understood. It is thought that the submucosa is invaded by the hematogenous route by bacteria from distant foci. These foci are not always demonstrable. In one case observed by the writer, bladder symptoms began two weeks after the appearance of a carbuncle on the lip. The normally loose areolar tissue surrounding the submucosa is replaced by a firm inelastic structure. In advanced cases this layer is very thick and penetrates the muscularis. The mucosa although attached to the underlying scar remains unchanged except for hyperemia. These lesions may be single or multiple, and may occupy a small portion of the bladder wall or become so extensive as to replace almost the entire submucosa, rendering the bladder practically inelastic and of small capacity. Frequency becomes progressively worse until it is marked both day and night and is associated with severe urgency. The

urine is grossly clear but contains a few pus cells and red cells. If the urge to void is delayed until over-distention of the bladder occurs there may be profuse hematuria. Cystoscopy performed while the urine is clear usually discloses only a spot of hyperemia, usually situated in the vault, posterior or lateral walls. When the bladder is over-distended the mucosa splits open at this point and bleeds smartly.

An ulcerative lesion, described by Fenwick in 1896, is occasionally seen in cases of irritable bladder. The lesions vary in size and depth and may be single or multiple. The bladder base is the usual location. Histologic examination of the excised tissue shows chronic inflammatory change. There is nothing suggestive about the history, the etiology is unknown, and the cystoscopic findings are not characteristic. Diagnosis is possible only after other types of bladder ulcers have been excluded.

Bladder tumors may be associated with acute or chronic inflammatory changes, these in turn causing irritation. Tumors located on the trigone or at the vesical neck may produce irritation without infection being present. Attention is directed toward the bladder because of the secondary cystitis, in many cases, before hematuria occurs and arouses suspicion of the presence of neoplastic disease. The cystitis is usually severe, most marked in the immediate vicinity of the tumor, and resistant to any treatment short of destruction of the new growth. In the same way bladder diverticulum often asserts its presence by irritable bladder due to infection persisting as a result of residual urine.

#### SECONDARY BLADDER LESIONS

Disease elsewhere in the urinary tract or disease in the adjacent pelvic structures is primarily the cause of a large proportion of cases of irritable bladder in women. When these diseases are recognized early and cured by appropriate measures the secondary bladder lesions tend to heal spontaneously, thus restoring normal function. However, when the extra-vesical disease is of long standing the bladder changes are often extensive. These changes may become permanent and prevent the return of normal bladder function even though the original focus has been discovered and successfully removed. In this event complete recovery will require a careful

determination of the exact nature of the bladder lesions and appropriate treatment.

The upper tract diseases that cause secondary infection are pyelonephritis and pyonephrosis, lithiasis with infection, and tuberculosis. Infection reaches the bladder via the urinary stream from the infected kidney except in some cases of tuberculosis, when the process either travels along the wall of the ureter or by way of the lymphatics. The changes occur first in the mucosa and consist of edema and dilatation of the blood vessels. In mild cases the infection is limited to the mucosa overlying the trigone and that surrounding the ureteral orifice of the infected upper tract. In severe cases the entire surface may be involved. These lesions are temporary and tend to heal following removal of the upper tract focus.

Infections of the female urethra, either gonorrheal or non-gonorrheal, often extend upward and involve the trigone and vesical neck. In mild infections or those of short duration the changes are mainly in the mucosa and are transient.

Fulminating inflammatory diseases of pelvic viscera occasionally spread to the bladder, causing cystitis. The serosa immediately adjacent to the inflammatory process is first involved, followed by invasion of the underlying muscularis, submucosa and mucosa.

If the extra-vesical focus of infection, whether located in the upper tract, pelvic structures, or urethra, is neglected and permitted to keep alive the process in the bladder the changes here will advance to a stage where removal of the focus will no longer be accompanied by resolution of the bladder lesion. Such lesions become more or less permanent. The underlying submucosa and muscularis become infiltrated and even the perivesical tissues may be invaded. Fibrous tissue is deposited and the bladder is thus changed to a fixed, thick walled organ of diminished capacity.

In tuberculosis, in addition to wide fibrous tissue replacement, tubercles develop in the mucosa and may go on to ulceration. These ulcers, often multiple, are usually found about a ureteral orifice and occasionally are covered over by urinary salts until good sized plaques are formed. This calcareous material as well as that adherent to other inflammatory lesions and tumors of the bladder may become free and form nuclei for the formation of stones. Rapid increase in the

size of the stones occurs in the presence of alkaline urine or when there exists any degree of obstruction at the vesical neck. Infection with urea-splitting organisms results in formation of carbon dioxide and ammonia, with the precipitation of inorganic salts. The inflamed and ulcerated areas and in some cases the entire mucosal surface may become covered by such deposits. The condition is called alkaline encrusted cystitis. In other cases the continued infection causes heaping up of the epithelial cells until several layers are formed, the uppermost being cornified. This change, called leukoplakia, occurs in patches and when seen at cystoscopy has a pearly white appearance.

Neglect of the infected urethra results in proliferative changes in the mucosa consisting of multiple polypoid projections most often seen at the internal sphincter. Submucous infiltration followed by cicatrization of the urethra and adjacent bladder neck may advance far enough to interfere with the muscles of urination and prevent complete emptying of the bladder. Rarely, contracture of the vesical neck, a condition analogous to the small fibrous prostate in the male, results with all the signs and symptoms of bladder neck obstruction.

#### IRRITATION WITHOUT BLADDER LESIONS

Bladder irritation may occur in the absence of any inflammatory or other active pathologic change in the bladder itself, urethra, or upper tracts. The irritation in these cases is due to a disturbance in the myo-neural mechanism controlling bladder function. A majority of these are produced by central nervous system disease and may result from damage to either afferent or efferent pathways. The degree to which the bladder is rendered irritable will depend on the nature and extent of destructive or irritative nerve changes and their influence on the muscles of urination. Among the diseases affecting the central nervous system that interfere with the nerve supply of the bladder are tabes dorsalis, pernicious anemia, multiple sclerosis, and transverse myelitis. Cases resulting from tabes are the most common. In an advanced case the bladder is of large capacity and atonic, and the sensation is considerably diminished. A large amount of residual urine is present which provokes a frequent desire to void.

In another group of such cases there is no central nervous system disease. Here the bladder irritation is produced by overflow into the trigonal muscle of spasm initiated in the ureter. The spasm in the ureter is caused by some form of stimulation such as stone, stricture, anomalous vessel obstruction, et cetera.

In still another group of cases in which no pathologic change in the bladder is demonstrable the irritation is caused by the ingestion of certain drugs or foods. Here the mechanism appears to be mere stimulation of nerve endings. Urotropine, cantharides, and certain other drugs may do this. Rarely, bladder irritation occurs as a manifestation of food sensitization. Duke has reported several cases in which the specific foods were determined.

Very rarely "irritable bladder" is nothing more than a habit frequency. This has been noted in very nervous people, and it is probable that the tone of the detrusor is maintained at a high point so that comparatively small amounts of urine in the bladder will bring about the desire to void.

#### COMMENT

It has been attempted to present the subject of bladder irritation in the form of a systematized clinical and pathologic consideration of the various conditions responsible for it. It is entirely wrong to think of the condition as an isolated and trivial symptom to be dealt with lightly. An appreciable number of cases of bladder irritation are caused by relatively innocent conditions, but to go on the assumption that all cases are of this sort is to invite serious blunder. No case of bladder irritation should be approached in this way. The condition should always be thought of as merely a symptom, possibly produced by a pathologic condition of real magnitude. In every instance a properly conducted investigation should be undertaken with the end in view of definitely determining the site, extent, and nature of the responsible lesion. If such a régime were routinely adhered to cases which have advanced to a point requiring major surgery or have seriously endangered life will be markedly decreased. Many such cases had as their first symptom bladder irritation. This symptom not infrequently is the first signal of a condition which will eventually result in advanced hydronephrosis or pyonephrosis and require nephrec-

tomy. It may be the first manifestation of a bladder tumor which through neglect will progress to inoperable proportions. It quite regularly is the first symptom of early tuberculosis, certain to become bilateral if ignored. These are not all. Even the acute simple cystitis if sufficiently long neglected will progress to extensive infiltration of the bladder wall and perivesical tissues with a resulting anatomic change which is not amenable to any form of treatment.

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# CASE REPORTS

## MASSIVE COLLAPSE OF THE LUNG DUE TO AORTIC ANEURYSM\*

REPORT OF TWO CASES

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*Case 1.*—This was the case of a white male, aged 61, a laborer, who was admitted to the Minneapolis General Hospital for the first time April 2, 1926.

His trouble began with hoarseness about three years before admission. This gradually progressed to a state of complete aphonia, which had been present about six weeks before entering the hospital. Brassy cough had been present about six months and was accompanied by expectoration of considerable quantities of mucoid material which, at times, was streaked with blood. Chest pain and dyspnea then made their appearance three months before coming to the hospital. The pain was of a dull, aching character and was quite well localized to the manubrium sterni. The dyspnea became extreme and exertion brought on severe respiratory paroxysms. Vertigo was sometimes associated with the dyspnea. His appetite had gradually failed during his illness and he had lost about 60 pounds in weight. No edema had been noted.

*Past History.*—Measles, small-pox and scarlet fever had been contracted during childhood. He had had a chancre in 1902 with a possible Neisserian infection and was treated at that time at Hot Springs with baths, oral medication and daily mercury rubs for a period of two months. For an indefinite period he had noted that the right arm had been smaller than the left. About four years previously he had had a sense of numbness in the left hand which came on in attacks lasting up to fifteen minutes and appearing about once each month, being usually brought on by hard work. This condition, however, gradually disappeared.

*Physical examination* revealed an emaciated man complaining of a brassy cough, aphonia, dyspnea, and chest pain. The skin showed definite loss of turgor. There were several enlarged glands in both inguinal regions and a scar was present on the right where glands had previously been removed. The pupils were equal and regular and reacted to light and accommodation. Extensive pyorrhea and dental caries were present. A definite tracheal tug was noted. A marked pulsation was visible over the whole left chest and on palpation this pulsation could be felt over the entire anterior chest. The apex beat was in the fourth inter-

costal space just within the nipple line. On percussion there was dullness over the upper sternum extending well to either side, the area being about 12 cm. in diameter and on the left extending from the clavicle downward until it merged with the left heart border. An area of slightly impaired resonance was noted posteriorly to the left of the spine, in the interscapular area. Tubular breathing was present on the right side posteriorly just lateral to the eighth to tenth dorsal spines. The breath sounds were diminished over the remainder of the right side posteriorly. A harsh to and fro murmur could be heard over the entire area of cardiac and aortic dullness, and there was a bell-like quality to the second heart sound in the second, third and fourth interspaces to the right of the sternum. Blood pressure on the right arm was 115 systolic, 55 diastolic; on the left arm 125 systolic, 60 diastolic. The pulse was suggestive of the Corrigan type. Frequent extrasystoles were present. No organs or masses were palpable in the abdomen. Right indirect inguinal hernia was noted. There was a small scar on the foreskin. The patellar reflexes were absent on both sides.

*Course.*—During the first two days in the hospital the temperature ranged up to 101.2°, but for the rest of his stay it remained normal with the exception of one rise to 100°. The pulse varied between 70 and 90, and respirations 16 to 24. The blood count was normal and the blood Wassermann negative. X-ray plates taken of the chest and heart (Plate I) on April 3rd were reported by the roentgenologist as follows: "There is a tremendous dilatation of the whole aorta, most marked in the transverse and descending portion of the arch. This extends posteriorly throughout the antero-posterior diameter of the mediastinum. The whole appearance is characteristic of an aneurysm. The trachea is displaced to the right by the large aortic arch. The heart itself is not particularly enlarged although there is some dilatation of the ascending aorta. There is a dense shadow in the lower lobe of the left lung of a rather irregular consistency. The left diaphragm is pulled up markedly. This appearance combined with the large aorta suggests the possibility of an obstruction of the bronchus in this region from pressure with purulent collection in the lung or possibly a collapse of that portion of the lung. Measurements on the six foot plate are as follows: Transverse thoracic 27.0, Ml 8.0, Mr 6.2, total 14.2. Aorta to the right of the mid-sternal line at the 3rd rib 7.3, to the left 5.0, total 12.3, transverse diameter of the arch of the aorta at the level of the 2nd rib 12.0.

Impression: Aneurysm of the aorta.  
Moderately enlarged heart.  
Collapse of the left lower lobe.  
Possible abscess, left lower lobe."

\*From the Medical Service of Dr. T. A. Peppard, Acting Chief of Service at the Minneapolis General Hospital.

Treatment during his stay in the hospital consisted of: (1) Potassium iodide 10 grs. three times daily, which was gradually increased to 50 grs. three times daily in nine days, the latter dose being then continued for five days; (2) five doses of neosalvarsan intravenously, the first two being 0.3 gm. each, the third 0.4 gm., and the fourth and fifth 0.6 gm. each. He

both bases. Breath sounds were absent over the left side except over the apex and in a small area in the axilla. Posteriorly the breath sounds were bronchial in character down to the ninth dorsal spine, below this absent on the right, vesicular on the left. Heart tones were totally irregular, rate 90, with a to and fro, systolic and diastolic murmur heard over the pre-

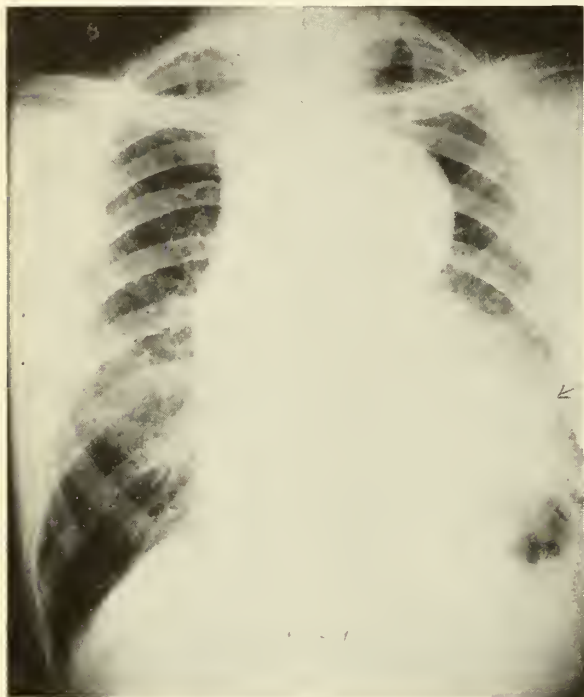


Plate I

left the hospital on the 15th of May, 1926, his general condition somewhat improved and seemingly quite comfortable after forty-three days in the hospital.

He was readmitted April 17, 1927, with the same complaints as before. In addition, for a period of about four months there had been pain throughout the left chest. This pain began gradually and at first was of a dull, aching character, coming and going, and lasting for several days at a time. About two months before admission, the pains became sharp and shooting in character, coming in spells lasting one to two hours each. He thought that most of these attacks were brought on by changes in weather, but at times this was not the case. There had been an additional loss of 10 pounds in weight.

Examination of the chest now showed several dilated, tortuous veins over the anterior chest wall, with diffuse pigmentation of the skin here. There was still a heaving pulsation of the entire chest, most marked over the upper sternum and to either side of this. A thrill was palpable at the third intercostal space on both sides. The percussion note was now flat over the left anterior chest down to the fourth interspace, below which the note became somewhat tympanic. The left border of the heart could not be made out. Posteriorly there was dullness over the left supraspinous area and at

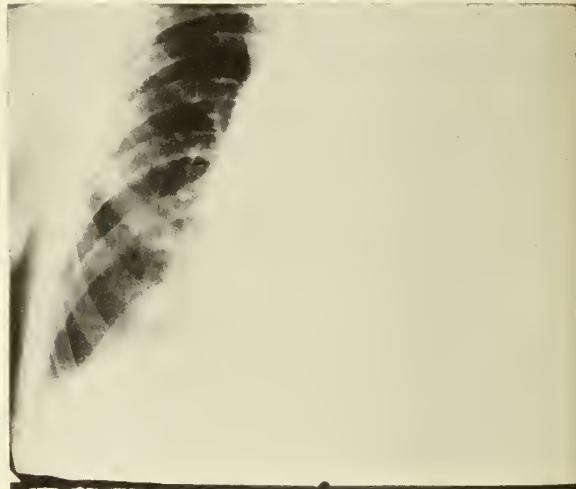


Plate II

cordium and into the neck vessels. Blood pressure 100 systolic, 45 diastolic, on both arms.

During this stay in the hospital his temperature ran a septic course most of the time, reaching a maximum of 102.4°. Leukocyte count varied from 11,500 to 20,900 with a predominance of polymorphonuclears. The Wassermann was negative twice, the urine essentially negative and likewise the sputum. The blood chemistry was normal. Vital capacity 1,700. X-ray of the chest taken April 19 (Plate II) was reported thus:

"There is a shadow of marked density involving the entire left lung field, being somewhat more dense in its medial portion and showing increased translucency toward the periphery and at the left base. The trachea is markedly deviated to the right and the shadow of the aorta extends somewhat more than normally to the right also. Fluoroscopically a pulsating margin could be defined about one inch within the lateral thoracic wall. The appearance suggests a definite extension of the aneurysm which was described about one year ago with also an element of marked collapse of the left lung. Measurements of the heart cannot be made owing to the obliteration of the left border.

Impression: Aneurysm of the transverse and descending aorta.

Pulmonary collapse."

Another plate, taken May 27, showed practically no change. Electrocardiograms showed frequent auricular extrasystoles and low voltage on two occasions. He was again given potassium iodide by mouth during the greater part of his stay, but no neosalvarsan was administered.

He was discharged on the first of July, 1927, after seventy-six days in the hospital. The septic temperature was still present and he was otherwise very little improved.

The final admission was on October 6, 1927. At this time his original complaints were greatly exaggerated and in addition he had been troubled with a cough for one month. This had recently become greatly productive.

Examination showed very little change since the previous admission. The temperature again assumed an irregular course, rising to 102° on one occasion. Leukocyte count varied from 14,600 to 12,100, hemoglobin 62 per cent and red blood count 3,330,000. The urine was normal and the Wassermann again negative. X-ray of the chest taken on October 8 was interpreted as follows: "There is practically complete obliteration of the left lung field with the exception of a very small area at the extreme apex. The heart and mediastinum are displaced toward the right with a marked deviation toward the right of the trachea and considerable prominence of the aorta on the right. In view of the previous history, the appearance could be entirely due to a large aortic aneurysm which produces considerable compression of the lung."

Electrocardiogram on October 11 still showed auricular extrasystoles with a slight left preponderance. He developed a pain in the right lower chest laterally with findings of râles and a definite friction rub here, necessitating strapping this side. Otherwise there was no apparent change in his condition until the 20th of October, when he suddenly developed a massive hemoptysis and died within one minute.

The report of the pathologist on the autopsy follows: "The left pleural cavity is completely obliterated by fibrous adhesions. The left lung is collapsed secondary to the pressure of a large mediastinal mass which is evidently an aneurysm of the aorta. The right lung weighs 710 gms. and is moderately emphysematous. The base of the right lung shows consolidation posteriorly. On section there is a fairly marked congestion and edema but no pus. Section of the left lung reveals marked dilatation of the large and small bronchi. These contain a considerable amount of yellowish pus and there is some purulent exudate peribronchial. The left lung is almost completely atelectatic and flesh-like.

The heart is not increased in weight. The aorta exhibits a very marked dilatation involving the transverse and descending portion of the arch. This mass is largely filled with clotted blood and some thrombus. Posteriorly there is pressure on the trachea and on the left bronchus causing stenosis thereof. At the point where the pressure was the greatest on the trachea, there is perforation through an area of about 1.5 cm. in diameter. This was evidently the immediate cause of death.

The liver weighs 1,800 gms. and on section shows a diffuse mottling 'nutmeg' in type. The spleen weighs 300 gms. It is fairly soft and dark red.

The kidneys show no increase in size and show no evidence of disease grossly. The root of the aorta

shows numerous partially white plaques beneath the intima and these extend well down into the thoracic aorta. The abdominal aorta is not involved.

Microscopic examination shows a chronic passive congestion of the liver, congestion of the right lung base and bronchiectasis with abscesses in the left lung, together with widespread atelectasis.

Diagnosis: (1) Luteic aneurysm of the aorta with rupture into the trachea and fatal hemorrhage; (2) stenosis of the left bronchus with bronchiectasis and multiple abscesses in the left lung; (3) atelectasis of the left lung; (4) compensatory emphysema of the right lung; (5) chronic passive congestion of the liver and spleen."

*Case 2.*—This patient is at present at the General Hospital. He was admitted on the 1st of February, 1928. He is a white male, age 52, married, American by birth and his occupation, a laborer. His complaints on admission were severe attacks of coughing, spitting of bright red blood, and shortness of breath. Although the history was contradictory in regard to many details, he apparently had been in good health until two or three weeks previously, when he developed a severe cold with purulent nasal discharge and cough. About this time, on two successive mornings, he felt nauseated and vomited after breakfast and had a heavy weight feeling in the abdomen. On both occasions, however, he was able to again eat his breakfast and go to work without further distress. His cough continued and was non-productive except in the morning, when he raised a good deal of thick phlegm. For three days he noted shortness of breath on exertion. He described this as a feeling as if there were something in his throat cutting his breath off. On the morning of admission he was suddenly seized with a severe paroxysm of coughing. During this he began to expectorate small quantities of bright red blood. He immediately came to the hospital and continued to expectorate small amounts of bright red blood for a few hours after admission. There was no history of loss of weight or loss of appetite and no other gastro-intestinal or genito-urinary disturbances.

*Past History.*—Measles, mumps and whooping cough during childhood. He had had no severe illnesses and no operations. He denied venereal infection to direct and indirect questioning.

*Family History.*—There was nothing of importance relative to the present condition.

*Physical examination* showed a well developed and well nourished white male lying in bed and coughing up small amounts of bright red blood at intervals, but otherwise showing no signs of discomfort. There was a soft subcutaneous tumor about the size of a hazel nut just above the left orbit. The pupils were equal and reacted to light and accommodation. There were numerous dental caries and marked pyorrhea was present. A few small cervical lymph nodes were palpable. Inspection of the chest revealed a marked restriction of motion of the entire left side. The percussion note was normal except for an area of slight impairment in

the interscapular area on the left side. There was no apparent enlargement of the cardiac dullness, and the P. M. I. was localized in the 5th intercostal space, 9.5 cm. to the left of the midline. The breath sounds were exaggerated over the entire right side, and practically absent over the entire left side except for an area of normal breathing above the second thoracic

entire appearance is characteristic of saccular aneurysm of the aorta."

Electrocardiogram taken on February 7, showed a right preponderance and occasional extrasystoles.

No change was noted in the patient's condition until February 17. On that day, however, the apex beat was seen to be lateral to the anterior axillary line in the



Plate III.



Plate IV.

spine posteriorly and an area of bronchial breathing at the base near the vertebral column. The heart sounds were normal. The abdomen showed no evidence of abnormality. The knee reflexes were bilaterally moderately increased. Blood pressure—left arm 140 systolic, 96 diastolic; right arm 134 systolic, 80 diastolic.

*Progress.*—After the first few hours, the patient seemed to be entirely comfortable except for a slight cough, which persisted. The hemoptysis soon disappeared entirely. The blood count showed hemoglobin 83, red blood cells 4,600,000; white blood cells 11,200, with a differential of 61 per cent P. M. N's. The urine was normal and the Wassermann was negative. The Wassermann was repeated following a provocative dose of 0.3 gm. of neosalvarsan and was again found to be negative. X-ray plates of the chest taken on the first day in the hospital (Plate III) were reported as follows:

"Stereoscopic plates were made of the chest and postero-anterior and lateral plates were made of the chest with the barium-filled esophagus. A large tumor mass is demonstrated extending into the left lung field from the region of the arch and upper portion of the descending aorta. On fluoroscopic examination this was demonstrated to pulsate and can be definitely connected with this portion of the aorta. It produces a marked pressure deformity of the esophagus. The

sixth intercostal space. The trachea was drawn definitely to the left. On percussion the note over the entire left chest was found to be flat and the right heart border was displaced beyond the midline into the left chest. Breath sounds were absent throughout the left chest. A rough systolic murmur was now heard in the third left interspace. The right chest was now definitely hyperresonant to percussion with exaggerated breath sounds. A tentative diagnosis of massive collapse of the left lung was made. On questioning the patient, he stated that he had noticed slight pain over the precordium that morning and the day before. Otherwise no discomfort was experienced. Pressure over the styloid process just medial to the tip of the mastoid showed the patient to be definitely hyposensitive.

X-ray plates were taken the same day (Plate IV) and these confirmed the clinical diagnosis, the report stating: "The heart and mediastinum are now markedly displaced into the left chest and there is a diffuse opacity involving the entire left field of the chest. The dome of the diaphragm cannot be made out but the gas bubble in the stomach appears to be definitely elevated so that there is no doubt a marked elevation of the left diaphragm. The entire appearance is characteristic of a massive collapse of the lung."

Impression: Massive collapse of the lung."

To date (April 3) there have been no further

changes in the chest findings. There have been no symptoms or discomfort except that he is now having more severe paroxysms of coughing. There has been no further hemoptysis and he has been afebrile throughout.

Electrocardiogram following the collapse showed no essential change. Blood pressure remained at 132 systolic, 80 diastolic. The hemoglobin has now dropped to 64, red blood count to 3,200,000. There has been no leukocytosis and the urine has remained normal. Spinal puncture done on the 28th of February brought out a clear fluid, albumin faint trace, no cells found, Wassermann negative and the colloidal gold showed no curve.

The last x-ray, taken on the 15th of March, shows "a marked retraction of the bony thorax on the left side with marked narrowing of the intercostal spaces."

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## TUBERCULOUS MENINGITIS\*

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### REPORT OF CASE

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E. J. ENGBERG, M.D.  
*Saint Paul*

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C. A. B., aged 28, a male and married, was seen in consultation with Dr. H. A. Molander, St. Paul.

The patient was admitted to the Mounds Park Sanitarium September 28, 1927, with the history that, about six weeks before, he had consulted Dr. Molander for a swelling in the left testicle. At this time he had frequent urination, and the urine showed pus and albumin; no gonococci. The pus and albumin cleared up under medication, but the swelling had persisted. Dr. Molander advised the removal of the testicle but the patient refused operation.

About a week before admission the patient had a severe chill with a general aching throughout the body. He had sneezed and coughed a great deal ever since and also had vomited. The last two days before admission he had acted queerly—talked to himself, was resistive, and wanted to sleep a great deal at times. He did not seem to recognize people he ought to know.

His past history and family history presented nothing unusual. His physical examination was reported by Dr. Molander to be negative except for the enlarged testicle.

Upon admission, his urinalysis was: acid sp. gr. 1.030; trace of albumin; no sugar; an occasional white blood cell with a few epithelial cells and some mucus. Hemoglobin was 78 per cent and the white blood cells 8,500, which had increased on October 3 to 11,400. The patient's temperature was 98.2, pulse 64, and respirations

24. Patient was complaining of headache and nausea, was very restless and resistive and frequently vomited a greenish fluid.

His condition remained much the same with a temperature reaching 101.2 at times until about 9:30 A. M. on October 4, when the temperature suddenly rose to 103 (axillary) from 100.2 an hour before, pulse 82, respirations 20, and at this time I was asked to see the patient.

On examination he was found to have rigidity of the neck (plus one) and a bilateral Kernig (plus one). The other examinations were uncertain as the patient was very excited and resistive. Spinal puncture showed fluid under great pressure, clear apparently when fresh, but slightly turbid after standing a short time. The spinal fluid examination showed a plus one Nonne, a cell count of 418; no organisms were found (the polymorphonuclears outnumbered the lymphocytes in a ratio of about 60 to 40). In a preliminary report the pathologist had informed me that the cells were all lymphocytes or nearly so, and on the basis of this report and the clinical picture, a provisional diagnosis of tuberculous meningitis was made.

The next morning the patient's condition was very much worse, with a temperature 103.8, pulse 136, and respirations about 30, and the patient was in a deep stupor. Upon looking at the laboratory report, it was noted that the written report disagreed with the oral one which had been received, and in speaking with the pathologist he said he had made a smear of the spinal fluid the previous day, and that his written report was on the basis of this examination, and, unfortunately, we had not been notified of the changed report.

We then did another spinal fluid examination, which showed a very cloudy fluid, with a plus one Nonne, cells 1,291 and in the ratio of 90 per cent polymorphonuclears to 10 per cent lymphocytes; no organisms found. We decided it was best to give 30 c.c. anti-meningococcic serum, intraspinously, but this did not influence the condition and the patient died about twelve hours later.

Post-mortem examination, reported by Dr. Kvitrud, was as follows:

"Opened cranium and found dura much injected. Brain also much injected. The fluid was reddish and turbid. The lower portion of cerebrum and all of cerebellum were somewhat mushy. The under surface of the cerebrum had what appeared to be little tubercles which were very minute. No frank pus made out anywhere. Smears from these small tubercles and of the fluid in the brain cavity show tubercle bacilli. Dura did not have any microscopic tubercles.

"Lower portion of left epididymis was hard and on removing the testicle and cutting into this hard lump pus and cheesy material were found which on smear showed tubercle bacilli. This mass was about 1 cm. in diameter.

"Diagnosis: Tuberculous meningitis, tuberculous epididymitis."

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\*Case reported at the Minnesota Meeting of the Neurological Society, April, 1928.

## President's Letter

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THE American Medical Association Meeting has come and gone and, from every standpoint, it was very successful. One of the outstanding features of the meeting was the scientific exhibit. No one, no matter how narrow or how broad his field, could fail to find many things of intense interest in this exhibit.

The method of handling the convention reflected great credit to the city of Minneapolis and the State of Minnesota. Too much praise cannot be given both the State and Hennepin County Auxiliary for the way they entertained the visiting ladies. This is the most difficult feature of any convention and is usually the hardest to handle. The wives of the delegates and officers were loud in their praises of the entertainment furnished them. I am informed that the Hennepin County Auxiliary of the Medical Society is the oldest in the United States and it certainly shows the value of a well organized group of efficient women at an occasion of this kind. We should help the State Auxiliary in every possible way and I hope that before the year is over there will be an organization of the auxiliary in every local Society in the State. The auxiliary can be of great help in making our meetings more successful, not only by promoting social activities, but I believe, properly directed, might be a great influence for community welfare in every district. The officers of the auxiliary tell me the greatest obstacle they have to organization is not the wives of the doctors but the doctors themselves. If this is true, we had better change our attitude and give them both our financial and moral support.

*C. B. Wright*

# EDITORIAL

## MINNESOTA MEDICINE

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### The A. M. A. and State Meeting

The recent A. M. A. convention must have been a revelation to those who attended this year for the first time. That such a large meeting with such an extensive program and so many sectional meetings was engineered with such a noticeable lack of confusion speaks well for the management and coöperation of those responsible. The detailed report of the meeting will appear in the A. M. A. Journal and only brief references to the meeting can be made here.

Fortunately the hundreds of papers read at the three-day scientific session will receive publication; for the physical impossibility of being in more than one place at the same time necessitated missing much that one would have liked to hear.

The scientific exhibit, which has grown to be such an important part of the convention, visualized many interesting phases of medical study. The microscope, x-ray, still and animated photographs, gross pathological specimens, blood vessel injections, cultures—all were in evidence. Everyone who attended must have picked up some interesting points which should be stimulating and of practical value. The practice of offering awards added the spice of competition to the exhibitions. The exhibits of four Minnesota men—Drs. Clauson, Scammon, Rigler and Horton—received mention in the report of the committee on awards.

Dr. William S. Thayer of Baltimore was installed as president for the ensuing year and at the election of officers Dr. Malcolm L. Harris of Chicago was chosen president-elect and Dr. W. A. Jones of Minneapolis vice-president. The present secretary, Dr. Olin West; treasurer, Dr. Austin A. Hayden; speaker of the house, Dr. F. C. Warnshuis, and trustees, Dr. J. H. Walsh and Dr. A. R. Mitchell, were re-elected. Next year's convention will be held in Portland, Oregon.

The House of Delegates of the State Association transacted all its business at the all-day session, June 11. The various committee reports were adopted and acted upon in accordance with the recommendations of the reference committee. No ruffle disturbed the tranquillity of the meeting. Those present had the opportunity of hearing a really remarkable address by Mr. Robert O. Jones of Seattle, Washington, in which were recounted experiences in Washington when the physicians awoke from their lethargy towards anti-medical activities and asserted organized efforts in opposition. If those who believe in a passive attitude on the part of the profession

could have heard the address they no doubt would have been converted.

Dr. J. T. Christison of Saint Paul, highly esteemed and much beloved, who has been so active in the Association for many years, will be our president in 1929. The other officers elected were: Dr. A. G. Liedloff, Mankato, first vice president; Dr. C. O. Estrem, Fergus Falls, second vice president; Dr. E. A. Meyerding, Saint Paul, secretary; Dr. Earle R. Hare, Minneapolis, treasurer; Dr. H. M. Workman, Tracy, councilor Third District; Dr. Frank J. Savage, Saint Paul, councilor Fifth District; Dr. W. W. Will, Bertha, councilor Seventh District. Dr. Herman M. Johnson, Dawson, and Dr. W. F. Braasch, Rochester, were elected A. M. A. delegates, and Dr. B. S. Adams, Hibbing, and Dr. O. J. Hagen, Moorhead, alternates respectively.

The invitation extended the Association to hold the convention in Mankato in the summer of 1929 was heartily accepted.

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### The Laboratory Technician

Since the World War, the field of laboratory technic has become an attractive occupation for young women, and from every walk of life they have been flocking into it in ever increasing numbers. It requires a comparatively short training period, and offers interesting work in the romantic atmosphere of a hospital or physician's office, and the pay compares well with that of other occupations. Many trained nurses are attracted by the shorter day-time hours without leaving the hospital. Every training point is besieged by many more requests from students than it can possibly accept. To add yet further confusion fraudulent schools are springing up and attracting unsophisticated girls. These are frequently night schools, promising to give training in clinical and x-ray laboratory technic, book-keeping, and the handling of patients, all in four or five months. They obtain their victims by a wide-spread advertising campaign in newspapers, promising large salaries and collecting tuition in advance. Their equipment and personnel is inadequate, to say the least, and they are not under the supervision of any reputable pathologist.

Different grades of technicians are needed, and this calls for different training. The girl who is

in charge of a laboratory, either alone or under a pathologist, should have a college education; but the girl working in one physician's office or doing simple tests in a large hospital laboratory may do excellent work with only a high school education. Accuracy and detail are prime requisites and no amount of education can compensate for their absence. On the other hand, they will carry far a girl with only a moderate amount of education.

Up to the present time, there has been no organized effort on the part of the medical profession to meet the demand for training. Various isolated hospitals give practical work, and various commercial schools have sprung up, but there has been no organization and no standardization. The University of Minnesota has a four year course arranged for the girl intending to do laboratory work, but although this gives an excellent foundation, it is apparent that every girl wishing laboratory technic cannot take a college course. At the present time the popularity of the work is a great disadvantage, for there are so many applicants for every position that many are accepting less than a living wage, and this lowers the average salary.

The American Society of Clinical Pathologists is making an attempt at classification and standardization of training schools for technicians. A committee, of which Dr. Kano Ikeda of St. Paul is a member, is making a detailed investigation with the object of standardization of schools and registration of technicians. The American Medical Association is watching the work with interest, and it is hoped that this most important organization will give its influence and support to so worthy a cause.

The individual physician has in his power the ability to help the condition to a certain degree. He has the opportunity to advise many girls who contemplate going into laboratory work. He can warn them of the present too great popularity of the field; he can advise them to take their training in some reputable place; and when he selects a girl for his own work, he can insist that she be properly trained, and he can pay her the salary that good work deserves. He can also add his voice to the insistence upon standardization, registration, and supervision of this most valuable assistant to the medical profession.

MARGARET WARWICK, M.D.

### Physicians' Service Bureau

After a year or more of careful consideration a group of some 188 physicians in Ramsey county have embarked upon a venture which by the first of this month will be in full swing. An organization distinct from the Ramsey County Medical Society but for the most part drawing its membership from the society has been formed for the purpose of assisting local members of the profession in a financial way. The main function of the new organization will be a credit bureau and collection agency. A physicians' telephone exchange was installed July 1, and a nurses' registry for the convenience of the profession will be an additional feature.

There is nothing original in the idea of the organization as adopted by the Ramsey county physicians. Similar organizations have operated successfully elsewhere but so far as we know this is the first example of just this type of undertaking in the state.

Physicians in the larger centers of population are in need of the services mentioned and as a rule obtain such services from separate agencies managed by individuals outside the profession. The collection of bad accounts is generally unsatisfactory from several angles. Doubtless this apparently necessary adjunct to the practice of modern medicine will never be satisfactorily solved. But ordinarily the physician turns over his bad accounts to a collection agency and knows little of the methods used to bring pressure to bear on his patients. In certain instances collection agencies ride rough shod over the patients and in one instance known an agency used unscrupulous methods, tacking on excessive charges for services which the patient was required to pay. There has been a feeling, too, that in general the rates for collections have been rather high.

The services of the profession in a locality such as Saint Paul, conservatively estimated, amount each year to a million and a half dollars in private services and doubtless another million and a half is donated in free service to the various free medical clinics in the city. The majority of the private professional services are rendered as a charge account and yet the profession has never had the use of a medical credit bureau.

It is hoped that the establishment of a medical credit bureau will be of use in designating certain individuals who should be classed as charity cases.

Certain types of practice seem to require the services of a physicians' exchange. When the profession has no part in the direction of such a service irregularities can very easily creep in to the advantage of certain members and the disadvantage of the rest. The proper operation of a physicians' exchange should be a distinct service to the public.

The success of the Saint Paul Physicians' Service Bureau will depend on the kind of supervision exerted by the responsible medical officers, the personnel chosen and the coöperation of the members.

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### APPLICATION OF PATHOLOGY TO SURGICAL PROBLEMS

Although pathologic opinion in individual cases is often the most important which the patient receives in the hospital and is therefore a necessity for efficient treatment, a far more important function of the pathologist is his ability to teach. Every man who practices medicine in any of its branches needs a sound training in pathology, but none more so than the surgeon. It is therefore a surgical problem to see that the supply of pathologists is kept up. So far as our influence on medical faculties and hospital boards goes, we should advocate adequate budgets for the pathological departments, and reiterate that the supposed advances in surgery of recent years are largely due to the pathologists and that our own daily work would be less effective if we had not had training in pathology. I think we older men can also do something in advising our assistants that a year or two in a laboratory where gross pathology can be studied and correlated with the histology will surely make a better surgeon. We surgeons must also accent our demand for a clinical tissue pathologist as opposed to one from the widening subdivisions of pathology which are now engaging attention, as serology, immunology, etc. If one looks over the journals of pathology, few articles on gross or minute pathology are seen. Practically the tissue pathologist is disappearing and it is a very important problem for surgeons to make an attractive place for him. Perhaps the answer will be to isolate the bulk of the surgery of malignant disease into a specialty and let the surgeons do their own microscopy.—CODMAN, E. A.: *New England J. Med.*, 198: 332 (April 5) 1928. Abstracted in *Bulletin, Association of American Medical Colleges* (July, 1928).

# ❧ THE JOURNAL CLINIC ❧

## Committee on Public Health Education

Continuing from last month we are presenting further opinions expressed at the Conference on Public Relations held April 26, 1928, under the auspices of the Committee on Public Health Education. The Committee holds no brief for these opinions:

MR. J. G. CROWNHART, Secretary,  
State Medical Society of Wisconsin:

"The program of the State Medical Society of Wisconsin is centered around lay education. It is the belief of the society that information that is authentic and simply expressed will do more to combat medical fakes and fads than direct attack. With this in mind, the press service was adopted as the best medium for supplying the people with the knowledge they needed.

"One story a week appears in the weekly and daily newspapers of the state. Opposition and objections were raised on all sides at first, but with no avail. These articles come from the pen of some well-known doctor; are submitted to a newspaper man, working with the society; are returned to a committee from the medical society for approval and to the author himself; finally are turned in to the press. This process is the only certain way of securing material that meets with the approval of the medical men and at the same time is good newspaper stuff. It thoroughly disputes the theory that coöperation between the doctors and the newspapers man is impractical; it provides the best medium, save that of direct contact, of informing the public."

MRS. J. D. LYON, Chairman. Public Health Association:  
Women's Auxiliary, Minnesota State Medical Association:

"The work of the Women's Auxiliary is carried on by the Public Health Committee. Its aim is to disseminate to the laity such knowledge on health matters as the society sponsors.

"There are ten local organizations throughout the state with a total membership of five hundred. Their activities differ according to the needs of the locality, but in general they supplement the program of the Dental Association.

"In Stearns-Benton counties, the Auxiliary furnished a room in a hospital; Washington county supplied the library with *Hygeia*; Saint Louis county assists in making surgical dressings for the hospitals, carried out health programs at the various Parent-Teacher Association meetings, established a scholarship fund for a graduate course for nurses. Rice county helps in preparing surgical dressings.

"In Ramsey County, the members of the Auxiliary spend an average of twenty hours a month in occupational therapy at the Gillette Hospital for Crippled Children. They have also furnished a room at the Children's Preventorium. In Hennepin County, which was the first in the country to organize (1910), the auxiliary provides accessories and gifts for the Glen Lake Sanatorium. A room has been furnished in the Bethany Hospital by the Hennepin Auxiliary.

"The ten local auxiliaries are centralized under the State Auxiliary, which pursues a program of general public health."

J. F. SHELLMAN, D.D.S., Director,  
Dental Clinics, Wilder Charities:

"The work of the dentist and his preachings on oral hygiene go hand in hand with other health programs. He does not confine himself strictly to the care of the teeth without branching into more general fields. For this reason, he should be considered a co-partner of the physician.

"Great strides have been made in Saint Paul in regard to dental clinics and surveys. In 1916, there was but one dentist working part time in the schools of the city. His equipment was incomplete and in poor condition.

"Today the results of the publicity campaign launched at that time are something to be proud of. In place of one part time dentist, there are seven full time dentists, paid through the Community Chest and the Women's Auxiliary. There are six dental hygienists paid by the school board working with complete modern equipment. The clinic maintained at the Wilder Dispensary has three part time dentists and one dental nurse in attendance. Two dentists are maintained at the city and county hospital.

"Much of the work is directed largely toward children from the kindergarten through the third and fourth grades. More lasting good can be done with them and there is more possibility of educating the parents to appreciate the principles of dental hygiene and general health.

"All the school children in the city are examined once a year and advised either to see a dentist or visit the dispensary according to their economic situation. There has been a marked improvement in the condition of teeth since this work was begun. Formerly an entire school would have only five per cent sound teeth, today that average has gone up to fifty-five per cent with some rooms having a record of one hundred per cent."

## MISCELLANEOUS

### MEDICAL MALPRACTICE SUITS\*

CZAR JOHNSON, M.D., F.A.C.S.  
*Lincoln, Nebraska*

#### (Third Paper)

The second or third physician who attends a patient is too frequently the starting point of a malpractice suit.

One doctor finds a case progressing unfavorably and he calls in a consultant to aid him; recovery is not satisfactory, the patient becomes dissatisfied or complains and requests that another doctor be called to the aid of the physician. These doctors are contemporary consultants.

A patient is dismissed from treatment, chooses to discontinue treatment or is referred to some other physician, or another physician is consulted with or without the consent or knowledge of the first physician. This physician is a subsequent consultant. A contemporary consultant might call the patient aside and explain what, in his opinion, the first physician in charge ought to have done and failed to do, but that does not often happen. The contemporary consultant, as well as the physician first in charge, is subject to action jointly.

#### JOINT LIABILITY

Physicians seem to be ignorant of joint liability. A prominent eye specialist was called into the ward to see a patient who had been operated upon for the removal of the Gasserian ganglion. He gave some advice to the surgeon and two years later was required to defend himself in a joint action against the surgeon and himself.

A surgeon was called into the operating room to assist another physician. He did not attend the patient afterwards but three years later was a defendant in a malpractice suit brought by this patient.

A physician went to a neighboring city to attend a patient as a consultant to the family physician. He neglected to ascertain whether the family physician was competent to carry out his directions and two years later paid his proportion of a \$3,000 judgment.

The consultant can be summoned and compelled to testify to what he saw or what he observed and if so summoned he should tell the truth. He is under no obligation to form or express opinions.

In what particular does the position of subsequent consultant differ from that of the contemporary consultant? The subsequent consultant being called in, it is his professional duty to render the patient the most skilful services of which he is capable; so also the contemporary consultant. Manifestly the consultant's duty to the patient is identical, whether he is consulted contemporaneously or subsequently.

The medical profession appears to assume that the relationship of the subsequent consultant to the doctor

previously in charge of the case is different. It is time that some one should ask why. His opinion about what might have been, if what was had been otherwise, or what might now be if what is were not, need never be formulated nor expressed. The suit can not be sustained without *opinion* testimony and so it is not brought.

No suit can start without medical opinion. I have endeavored to make plain that the success or failure of a suit for malpractice depends almost entirely upon opinion testimony which, if given at all, is given voluntarily. The volunteering of medical opinion in order to incite or sustain a malpractice suit against a physician is prejudicial and never justifiable. This should be so defined in our code of ethics, and only in our code of ethics should the subject be dealt with. I want to make this emphatic because about every so often some misguided medical society proceeds to adopt rules, regulations or resolutions on this subject that produce disaster when read into the record of a malpractice suit.

#### UNDERMINING CONFIDENCE

Physicians should be able to realize the undermining effect that repeated suits alleging negligence have on any organization. It has seemed to me that we are slow to recognize many of the excellent organization principles of industry. A number of years ago the general counsel for a very large corporation adopted the policy of avoiding lawsuits even to the extent of professional and financial sacrifice at times. Today this man's company, in his territory, has not only universal goodwill, but less suits are filed against his company in his division than in any other.

The effect of repeated lawsuits applies with particular force to the medical profession, whose usefulness depends materially upon the confidence of the public. I appreciate that malpractice suits can not be entirely eliminated, but they can be reduced to an irreducible minimum, and those that then occur must be endured. Typhoid fever occasionally occurs, but that is not an argument against measures for prevention. Yellow fever once blocked a short passageway between the Atlantic and Pacific, but yellow fever was eliminated, these oceans became united and our national defense strengthened. There are few diseases that are curable. Preventive medicine has the confidence of the public and is the foundation of modern medicine. Sacrifice, knowledge, and moral courage were required to produce it. The prevention of malpractice will require the same qualities.

The first requisite is knowledge of medicine, knowledge of liability and moral courage.

Medical knowledge is available to every physician who seeks it. There is little professional and no legal excuse for lack of knowledge.

The rule is that the treatment accorded must be that which is customarily prescribed by physicians doing a like class of work. Therefore surgical treatment must be of a grade approaching the topmost in the community. The same holds true of the other usual divisions of medicine. Conceit or selfishness are not legal defenses. If disaster could have been prevented by assistance, and qualified assistance was available, a rea-

\*This is the third and final article by Dr. Johnson appearing in MINNESOTA MEDICINE. The first and second articles were published in the May and June issues.

sonably prudent physician would have sought it and failure to have done so is negligence. Any number of situations might be related wherein this aspect of the question arises.

Knowledge of liability is less available. State Medical Defense Committees should be busy furnishing the fundamentals as rapidly as their time and money will permit.

Moral courage is more difficult to disseminate. Egoism and selfishness are the offspring of ignorance. Ignorance is forgivable but not excusable. The aiding and abetting of ignorance or negligence is neither forgivable nor excusable. It will require moral courage to eliminate these vices and their disastrous effect upon medicine, but until it is done individual and joint liability will continue to be asserted in causes of action.

Physicians should more fully realize, not only their moral and professional obligations, but also their legal liabilities. Surgeons frequently operate in a country town, collect their fees and leave without written orders for the after-care of the patient. It is negligence to delegate to a referring physician of unknown ability unusual medical procedures, and should untoward results occur because of this carelessness a joint action may follow.

It will require considerable moral courage for the advanced physician to refrain from aiding and abetting a physician who is in legal difficulties because of his incompetency, yet sooner or later this will have to come about. The whole is greater than the part. The loss of respect of the courts and professional bankruptcy are at the end of our present medical defense policy.

#### PRIVILEGED COMMUNICATIONS

The maintenance of strictly professional relations with patients and their relatives and the observance of privileged communications are imperative. Time was when a physician looked upon the information gained from a patient as sacred. The present-day custom of discussing cases at medical societies, the clubs, cafes and lodges, often describing patients so closely that the name might just as well be included, has developed a laxity of respect for privileges. A privileged communication, except under very rare conditions, has always been held inviolate by the courts and is too precious to be thrown away.

Office and hospital records which often contain the strictest sort of confidential data are passed from one assistant to another, or to young untrained nurses, and should some patient's reputation suffer because of idle remarks or information published by gossip the doctor may pay dearly for his negligence.

Newspaper reports of sickness and accidental injuries frequently contain confidential and privileged information. Some of these published accounts would make excellent trial evidence should some misguided physician be called upon to reimburse a patient for finan-

cial injury sustained from information volunteered by him.

Insurance companies frequently write to physicians for confidential information concerning a former patient. What right has the physician to divulge this information? Suppose that, because of the violation of the trust imposed in the doctor, the former patient or patient's family are financially damaged. Do you not think the physician would be liable?

Accident insurance companies invariably ask physicians for privileged information and written medical opinions regarding claimants, for which they sometimes pay 50 cents to \$1.00. There are physicians gullible enough to assume a liability for the sum and also to violate their moral and professional obligations.

The third requisite is abstinence—abstinence from voluntary statements of facts to patients, their relatives or legal representatives when such statements may directly or indirectly reflect upon the professional or personal integrity of another physician.

The expression of a personal opinion of another physician, if unfavorable, may result in intensifying the prejudice of the patient against the other doctor, cause distrust and disrespect for the critic or start a suit for damages, and in any event the profession as a whole suffers.

The expression of an unfavorable professional opinion of another physician or his treatment is a voluntary invitation to trouble. Aside from the financial and professional damages that may occur it may be very embarrassing to have the remarks written into a court record.

Frequently lawyers resort to social visits to secure information sufficient to draw up a petition. Often they use depositions to get a case before the jury. It is strange that highly ethical and educated physicians fail to appreciate this or recognize that a medical opinion, given socially or in the form of a deposition, may be just as damaging to the defendant as testimony voluntarily given in court.

Physicians must learn to abstain from expressing opinions that are detrimental to any physician or the medical profession, in court or out of court, regarding the condition or any events that may have occurred in a condition of a patient that has been examined for treatment or for the purpose of forming a hypothetical question or answer.

The medical profession should set itself to the task that has long been neglected. The issue is clear. Some form of treatment must be chosen for malpractice suits. Is it to be an expectant one, with sedatives and post-mortem deodorants, which requires little effort? Or is it to be modern, preventive and applied therapeutics, which requires collective action, discipline and moral courage?

Federal Trust Bldg.

## NORTHWEST CONFERENCE FOR CHILD HEALTH AND PARENT EDUCATION

To the Organizations Sponsoring the Second Northwest Conference for Child Health and Parent Education, held March 27, 28, and 29, 1928, and to the Members of the Joint Committee in general charge of the Conference:

The Executive Secretary presents this statement of the results of the Second Northwest Conference for Child Health and Parent Education.

### REGISTRATION

In conferences of this character registration is seemingly a precarious thing. People who are possessed of a ticket cannot be refused admission and there is no way to determine that they have or have not registered. Hence the value of registration rests upon the record of visitors which, so far as it goes, may be used as a means to intelligent publicity upon future occasions. It is not an index to the number in attendance.

These partial registration records, the ticket sales and receipts, together with a rough estimate of those present at any meeting, give a fairly close estimate of numbers. These figures indicate that some 3,300 people attended the conference; with a probable total of 5,000 single admissions in all, at the eight main sessions, the seven luncheon round tables and the dinner meeting. This would suggest a somewhat larger individual attendance, but a less continuing attendance at the conference sessions than in the conference of 1927 in Minneapolis.

### TICKET SALES

Successful ticket sales are dependent upon a number of factors. These are (1) the publicity preceding the conference; (2) the recognized reputation of the speakers; (3) the interest inspired by the subject matter of the program; and (4) the active canvass undertaken by ticket selling individuals or groups in the local community. In the judgment of your Secretary, the first three of these determining influences played as strong as, or even a stronger part than in the preceding year. Unquestionably the ticket sale failed of its full measure of activity.

### TICKET SALES RECORD

	1927	1928
Course Tickets .....	755	524
Single Session Tickets.....	2689	1814
Special Admission Tickets.....		430
Luncheon Tickets .....	1221	1270
Dinner Tickets .....	223	80
Total .....	4888	4118

The comparison of ticket sale figures in the two succeeding conferences bears out these conclusions. The total luncheon attendance was reinforced by the men's luncheon introduced this year.

### EDUCATIONAL VALUES OF THE CONFERENCE

Numbers are something of an index to the success of such a conference. They attest, in this instance, the growing interest of the people in parent education, the increasing consciousness of their need. They show an

extending appreciation of child study. The special effort put forth this year to interest fathers in the part they should play in the upbringing of the child was encouragingly successful. The attendance, in general, would seem to justify the continuance of an annual conference in the Twin Cities. It may fairly be expected that the interest in these meetings will gradually extend into the state at large and into neighboring states. It is an educational influence of gathering power. Ad interim publicity should develop a more active interest in the younger group of mothers.

### FINANCES OF THE CONFERENCE

This sort of venture is still new. The business men of Saint Paul, nevertheless, responded very liberally in its support. There was no difficulty in securing a generous guaranty fund. Our experience has taught us much in methods of promotion. We have yet much to learn. Successful, from the business point of view, as such new enterprises go, the conference should achieve a yet larger financial success. The financial statement follows:

### LUNCHEON AND DINNER ACCOUNTS

#### Receipts

By Sale of Dinner Tickets.....	\$ 160.00
By Sale of Luncheon Tickets.....	1,005.25
	<hr/>
	\$1,165.25

#### Payments

Paid to the Saint Paul Hotel.....	\$ 989.75
Paid to the St. Paul Athletic Club.....	160.50
	<hr/>
	\$1,150.25
Balance on hand.....	15.00
	<hr/>
	\$1,165.25

### CONFERENCE ACCOUNT

#### Receipts

By Sale of Course Tickets.....	\$1,572.00
By Sale of Single Tickets.....	907.00
By Purchase of Single Tickets with Ticket Gift Fund .....	412.50
By Sale of Special Admission Tickets.....	107.50
By Sale of Auditorium Boxes.....	450.00
	<hr/>
	\$3,449.00
By Refunds on Tickets.....	14.50
	<hr/>
	\$3,434.50
By Exhibits and Literature a/c.....	238.05
By Miscellaneous Receipts.....	15.38
By Interest on Bank Account.....	78.75
By Gifts .....	620.96
	<hr/>
	\$4,387.64
Deficit .....	2,371.20

BALANCING ACCOUNT .....	\$6,758.84
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#### Expenditures

Postage .....	\$ 238.14
Stationery and Supplies.....	220.19
Programs .....	212.32

Form Letters .....	44.15
Printing Tickets .....	42.00
Publicity .....	530.13
Clerical Services.....	2,414.84
Exhibits and Literature.....	334.74
Rental, Auditorium.....	612.40
Transportation and Miscellaneous Expense.....	114.28
Speakers' Expenses.....	1,045.65
Speakers' Honoraria .....	950.00
<b>TOTAL .....</b>	<b>\$6,758.84</b>

## GUARANTY FUND

Gift Subscriptions .....	\$ 620.96
Guaranty Fund .....	9,600.00
	<b>\$10,220.96</b>
Gift Subscriptions .....	\$ 620.96
Refunds to Guarantors.....	7,228.80
Deficit .....	2,371.20
	<b>\$10,220.96</b>

The full itemized statements of ticket sales, receipts, from the several sources, expenditures, guaranty fund and refunds have been audited by the Comptroller of the Minneapolis Council of Social Agencies and are on file in the Minneapolis office of the conference, subject to the inspection of anyone who may desire to see them.

## EDUCATIONAL RESULTS OF THE CONFERENCE

The conference, energizing as it is, should be simply a seeding-time in the minds of mothers, fathers, teachers, physicians and public health nurses. It should bear leaf in a continuity of child study by study groups in parent-teacher associations, college clubs, women's clubs and mothers' clubs throughout the year. It should come to flower in the publication of its program in book form for the further education of these groups. It should bear fruit ultimately in the development of a school of parent education.

Respectfully submitted,  
(Signed) Richard Olding Beard,  
Executive Secretary.

## MINNESOTA BOARD OF MEDICAL EXAMINERS

Investigation by the Board was recently made of a so-called Health Center at Olivia, Minnesota, operated by one Emilie D. K. Ewald, a naturopath by advertisement, a masseuse according to her own statement, and a practitioner with no license of any sort, in fact.

Her advertising cards mention Vit-O-Net electric baths, psycho-magnetic therapy and intestinal gardening for the prolongation of youth. Diagnosis is made "without questioning your ills." If "Dr." Ewald's promise to move on is not carried out further action will be taken.

## OBITUARY

## Dr. Isaac L. Mahan

Dr. Isaac L. Mahan of St. Paul, for thirty-six years librarian of the United States Circuit Court of Appeals and for years active in the G. A. R., died June 17 in St. Louis after an illness of several months.

Following his custom, Dr. Mahan went to St. Louis in November for the winter term of the Circuit court. He became ill in December and was unable to return to St. Paul.

Dr. Mahan was 87 years old. Although he held the degree of doctor of medicine, he never practiced the profession, but for more than 30 years was in various branches of the Federal service.

In 1903 Dr. Mahan was state commander of the Minnesota G. A. R. He also was commander of Acker post in St. Paul. He was active in Masonic work and was one of the organizers of the Mystic Shrine in St. Paul.

He was appointed Circuit court librarian by the late Judge Walter H. Sanborn.

Dr. Mahan was born in Indiana in 1841 and spent most of his childhood at Terre Haute. When 10 years old he paid his school expenses by selling papers. The day Fort Sumter was fired on, he enlisted in the Union army. When he was discharged at the end of the Civil War he had risen to the rank of captain.

After being mustered out, Captain Mahan entered Rush Medical College at Chicago and studied there until he obtained his degree. He did not take up the practice of his profession, however, but entered the more exciting life of a special agent for the internal revenue bureau, trying to enforce the revenue laws among the moonshiners of the South.

After three years of this work, he became a Federal Indian agent and as such came to St. Paul in 1873 on his way to take charge of the La Pointe agency at Bayfield, Wis. In 1882 Dr. Mahan was promoted to Indian agency inspector with headquarters in St. Paul. Later he was in the drug business there and also was a real estate dealer for a time. He was a friend of Lon Merritt, discoverer of the Minnesota iron range, and also knew intimately many other leaders.

Surviving Dr. Mahan, besides his brother, Samuel E. Mahan of St. Paul, are his widow and a daughter, Mrs. M. Daugherty of St. Louis, at whose home he had been staying before his death.

## Dr. F. G. Landeen

Dr. F. G. Landeen, prominent Stillwater physician and surgeon, was found dead in his office May 30. Dr. Landeen, 53 years old, is believed to have died of heart disease. He had practiced in Stillwater thirty-three years.

Surviving are his widow, a son, Hoyt, and a daughter, Mrs. Clyde Lovf of Minneapolis.

### Dr. A. B. Moulton

Dr. A. B. Moulton of Lewiston, Minnesota, was electrocuted Saturday afternoon, May 12, when an iron pipe with which he was working came in contact with an overhead electric power wire. Dr. Moulton was 52 years old and had practiced in Lewiston the past year. He formerly lived at Zumbro Falls.

Dr. Moulton is survived by his widow and three children.

## OF GENERAL INTEREST

Dr. F. N. Grose has moved from Bertha, Minnesota, to Clarissa, Minnesota.

Dr. Louis A. Fried has moved from Ada, Minnesota, to Saint Paul, where he has located at 386 West Annapolis Street.

Dr. Henry E. Michelson has been promoted from assistant professor to professor of dermatology and syphilis at the University of Minnesota.

Dr. Hendrie W. Grant has announced the removal of his offices to 339 Lowry Medical Arts Building, Saint Paul, for the practice of his specialty, ophthalmology.

Dr. B. J. Gallagher has returned to his former practice at Waseca, Minn. Dr. Gallagher had been associated with the Lewis Clinic at St. Cloud the past year.

Dr. Arthur C. Strachauer, Minneapolis, addressed the Eau Claire County Medical Society, Eau Claire, Wisconsin, May 28, on "Carcinoma of the Rectum," illustrated with lantern slides.

Dr. Leo G. Rigler and Dr. Walter H. Ude have taken charge of the x-ray department at the Eitel Hospital, Minneapolis, succeeding Dr. Frank Bissell, who will leave for Europe this month.

Dr. Henry A. Roust, formerly of Ruthton, Minnesota, is now engaged in practice at Montevideo. Dr. H. L. Sargeant of Fergus Falls has purchased the practice of Dr. Roust at Ruthton and is now located there.

At Jackson, Minnesota, probably the first action to be taken against illegal practitioners under the new Basic Science law occurred when a Mrs. Hall, who pretended to cure her patients by the use of herbs obtained from some old Indian, was prosecuted on July 18, 1927. As a result she left the state.

Miss Mary Danielson, superintendent of nurses, and Miss Ruth Gustafson, instructor, of Mounds Midway School of Nursing, left June 7 for a trip to Europe, where they expect to visit and study nursing conditions in England, Scandinavia, Germany, France and Italy. They plan to return about October 1.

Dr. Adolph Hanson of Faribault was awarded the 1927 prize of \$250.00 for the best work presented before the Minnesota Society of Internal Medicine

during the year. A similar prize will be awarded during the year 1928 for meritorious work. Theses should be sent to the secretary, Dr. E. L. Gardner, 610 Yeates Building, Minneapolis, before October 1, 1928.

Dr. Donald C. Smelzer, superintendent of the Miller hospital, Saint Paul, was elected president of the Minnesota Hospital Association at its annual meeting held in Minneapolis in June. Other officers elected were: James McNee, Duluth, first vice president; Sister M. Julitta of St. Cloud, second vice president; Miss Elizabeth McGregor of Gillette hospital, Saint Paul, third vice president, and J. J. Norby of Minneapolis, secretary and treasurer. The executive committee includes Miss Harriett Hartry of Minneapolis, H. V. Smith of the Northern Pacific hospital, Saint Paul, and Paul Fesler of the University hospital, Minneapolis.

## NEW AND NON-OFFICIAL REMEDIES

The following articles have been accepted by the Council on Pharmacy and Chemistry of the American Medical Association:

H. K. MULFORD Co.

Diphtheria Toxoid-Mulford.

PARKE, DAVIS & Co.

Glaseptic Ampoules Solution Glucose, 50 per cent, 20 c.c.

Glaseptic Ampoules Solution Glucose, 50 per cent, 50 c.c.

Stearodine.

Stearodine Tablets.

PASTEUR INSTITUTE OF ST. LOUIS

Antirabic Virus (Semple).

G. D. SEARLE & Co.

Bismuth Sodium Tartrate-Searle.

Ampoules Bismuth Sodium Tartrate-Searle, 2 c.c.

SWAN-MYERS Co.

Biennial Sage Concentrated Pollen Extract-Swan-Myers.

Pollen Extracts-Swan-Myers 2,000 unit packages.

### CHANGE OF AGENCY

Viking Palatable Cod Liver Oil, formerly distributed by Sigurd E. Roll, Chicago, is now distributed by Viking Health Products Co., Chicago. The Council has continued the acceptance of Viking Palatable Cod Liver Oil under the new distributor.

### TRUTH ABOUT MEDICINES

*Ethylene-Cheney*.—A brand of ethylene for anesthesia—N. N. R. (New and Non-official Remedies, 1928, p. 51). The Cheney Chemical Co. (Jour. A. M. A., May 5, 1928, p. 144.)

*Lipiodol-Lafay*.—Iodized Poppy-seed Oil 40 per cent. An iodine addition product of poppy-seed oil containing 39 to 41 per cent of iodine in organic combination.

Lipiodol-Lafay is used as a contrast medium in myelography and pyelography, for detecting urethral strictures, in the spinal column for detecting tumors, and in other conditions for which roentgenologic exploration is desired. It is supplied in ampoules containing 1, 2, 3 and 5 c.c. respectively. E. Fougere & Co., New York.

*Lipiodol Radiologique Descendant.*—Iodized Poppy-seed Oil 35 per cent. An iodine addition product of poppy-seed oil containing 34 to 36 per cent of iodine in organic combination. In subarachnoid injection for roentgen-ray examination, lipiodol radiologique descendant is used for the recognition of intradural tumors. E. Fougere & Co., New York.

*Lipiodol Radiologique Ascendant.*—Iodized Poppy-seed Oil 10 per cent. An iodine addition product of poppy-seed oil containing 9.8 to 11.2 per cent of iodine in organic combination. In subarachnoid injection for roentgen-ray examination, lipiodol radiologique ascendant is used for recognition of intradural tumors when it is desired to employ a contrast medium of lesser density than that of the spinal fluid. E. Fougere & Co., New York.

*Mead's Powdered Boilable Protein Milk.*—A modified milk preparation having a relatively high protein content and a relatively low carbohydrate content. Each 100 gm. contains approximately protein, 39 gm.; butter-fat, 27 gm.; lactose, 24 gm.; free lactic acid, 2 gm.; ash, 6 gm.; and moisture, 2 gm. When suitably mixed with water, powdered boilable protein milk is useful for correcting intestinal disorders of infants and children. Mead Johnson and Company, Evansville, Ind.

*Antirabic Virus (Semple).*—A phenol-killed antirabic vaccine prepared according to the general method of David Semple (New and Non-official Remedies, 1928, p. 363). It is marketed in packages of fourteen doses, each dose consisting of 2 c.c.; all the doses are of the same potency. Pasteur Institute of St. Louis, St. Louis. (Jour. A. M. A., May 19, 1928, p. 1627.)

*Stearodine.*—Calcium Iodostearate. It contains from 26 to 28 per cent of iodine in organic combination. Stearodine is used as a substitute for the inorganic iodides, over which it is claimed to have an advantage in that it is longer retained and therefore better utilized. See Iodized Fats and Fatty Acids, New and Non-official Remedies, 1928, p. 212. Stearodine is also supplied in the form of tablets, each containing stearodine equivalent to 0.01 gm. of iodine. Parke, Davis & Co., Detroit. (Jour. A. M. A., May 26, 1928, p. 1711.)

## REPORTS AND ANNOUNCEMENTS OF SOCIETIES

### AMERICAN RADIUM SOCIETY

The American Radium Society held its annual meeting in Minneapolis June 11 and 12. Dr. Curtis F. Burnam, Baltimore, president of the Society, made the opening address Monday morning. A cancer clinic was conducted by Dr. A. C. Strachauer and members

of the staff at the Cancer Institute, University of Minnesota, Monday afternoon. A banquet was held at the Hotel Radisson Monday evening. The speakers were Dr. W. J. Mayo, Rochester, Minn., Dr. S. C. Lind, University of Minnesota, and Dr. A. C. Strachauer, Minneapolis. The scientific sessions were continued on Tuesday at Hotel Radisson, with Dr. Burnam presiding. Dr. H. H. Bowing, Rochester, Minn., was in charge of local arrangements.

### AMERICAN PHARMACEUTICAL ASSOCIATION

The attention of pharmaceutical research workers is called to the following:

The seventy-sixth annual convention of the American Pharmaceutical Association will be held at the Eastland Hotel, Portland, Maine, during the week of August 20, 1928. Papers presented before the convention are to be limited to ten minutes and abstracts of the papers should be submitted to the secretary, Paul S. Pittenger, 307 West Pratt Street, Baltimore, Maryland, in advance.

### SCOTT-CARVER COUNTY MEDICAL SOCIETY

At the regular meeting of the Scott-Carver County Medical Society held at Chaska, April 26, 1928, Dr. John Butler of Minneapolis gave an instructive talk on various phases of dermatology, illustrated with lantern slides. Dr. Chester A. Stewart of Minneapolis discussed the subject of Infant Feeding and presented several clinical cases.

### CHISAGO-PINE COUNTY MEDICAL SOCIETY

At the annual meeting of the Chisago-Pine County Medical Society the following officers were elected for the ensuing year: President, Dr. Thomas Zeien, North Branch; vice president, Dr. F. F. Callahan, Pokegama; secretary-treasurer, Dr. C. G. Kelsey, Hinckley. Dr. Zeien was elected delegate to the State Association meeting and Dr. Callahan, alternate.

### WABASHA COUNTY MEDICAL SOCIETY

The sixtieth annual meeting of the Wabasha County Medical Society will be held July 5, at Plainview, Minnesota. The business session at 11 a. m. will be followed by a dinner at the Plainview Hotel.

The following program will be given at 2 o'clock in the City Hall:

President's Address—"Medical Progress in Wabasha County Since the Founding of this Society," Dr. W. J. Cochrane, Lake City.

"Specialism," Dr. D. P. Dempsey, Kellogg.

"Functional Dyspepsia," Dr. D. M. Masson, Rochester, Mayo Clinic Staff.

"A Review of the 1928 Interstate Post-Graduate Assembly Tour," Dr. Arnold S. Anderson, St. Paul, Office of Board of Control.

## TRANSACTIONS OF THE MINNEAPOLIS SURGICAL SOCIETY

Meeting of May 3, 1928

DR. H. B. SWEETSER, President, presiding

DR. H. B. SWEETSER assisted by Dr. H. B. Sweetser, Jr., gave a demonstration of the use of surgical diathermy.

DR. S. R. MAXEINER reported the following case:

Patient, 65 years of age, single, came into the hospital March 7, complaining of pain in left lower quadrant, bloody stools and constipation. Two years ago she consulted Dr. Gardner with pain in left lower quadrant, constipation, etc. Complete gastro-intestinal study and proctoscopic examination were entirely negative. She was put on management and entirely relieved except that she has had a pain remaining in the lower quadrant from time to time. Two weeks ago the patient developed bloody stools and consulted Dr. Gardner. Proctoscopic examination revealed a small tumor on the anterior wall of the rectum. This was cauliflower in appearance, about the size of a dime and bled easily when touched. It was about 2 inches above the sphincter on the rectovaginal septum. A small piece of the tumor was removed and examined by Dr. E. T. Bell and reported to be adenocarcinoma.

On March 19, the first stage, consisting of an exploratory operation and colostomy was done. At this time adhesions were found around the sigmoid that undoubtedly accounted for her left sided pain. No metastases were found in any of the pelvic glands. A permanent colostomy was made through a McBurney incision just mesial to the superior spine. The patient made an uneventful recovery from her operation, but just before we were ready to do the second stage she developed the "flu" and a bronchopneumonia.

On May 3, through an incision from the end of the sacrum encircling the anus, the entire rectum together with the posterior wall of the vagina were removed. The peritoneum was opened in the cul-de-sac of Douglas and the sigmoid, together with its lymphatics, was removed to the extent that the entire specimen measured approximately 15 inches in length. All of the lymphatics and vessels were removed in one piece. The proximal end of the bowel was inverted and anchored outside of the peritoneum in the pelvic wound. No attempt was made to close the wound but the entire cavity was packed with gauze. At the time of the biopsy radium was introduced into the rectum under the instruction of Dr. C. R. Drake and was allowed to remain up to the maximum point of safety.

In view of the fact that the patient developed pneumonia and the second stage of the operation had to be delayed this was undoubtedly an excellent procedure inasmuch as the original growth had been almost entirely destroyed when the specimen was removed. No glandular involvement could be found in the specimen.

This is undoubtedly the earliest carcinoma of the rectum which I have ever seen and the patient should have an excellent opportunity for a complete and permanent recovery. Both operations were done under local anesthesia, the abdominal exploration and colostomy

being done under abdominal infiltration and splanchnic. The posterior resection was done under infiltration anesthesia combined with sacral anesthesia. Patient is making a complete recovery from the operation but the large wound is healing slowly.

DR. MARTIN NORDLAND reported two cases of Meckel's diverticulum as follows:

Obstruction may take place by Meckel's diverticulum, a structure due to persistence of the vitelline or omphalomesenteric duct, coming off from the ileum from 12 to 36 inches above the ileocecal valve, and present in about 2 per cent of persons. The vitelline duct should be obliterated in the eighth week of fetal life. If it persists, the individual possessing it is in constant and serious danger. The mortality of a series of cases of obstruction due to Meckel's diverticulum is enormous. Meckel's diverticulum usually has no mesentery, is from 3 to 10 inches long, and arises from the convex side of the gut. It may hang free or may be attached to the umbilicus by its tip or by a fibrous cord formed by the obliterated tip. In some cases it remains open at the umbilicus. In other cases a cord runs from the umbilicus to the gut or the tip of the diverticulum, or is adherent to another portion of the intestine. The diverticulum may become gangrenous with or without strangulation, may enter a hernial sac, may ulcerate or perforate like an appendix.

Strangulation of the diverticulum may take place beneath an adherent appendix, a fallopian tube, a portion of mesentery, or the pedicle of an ovarian tumor, or it may take place in an ommental or a mesenteric aperture. Gangrene, inflammation, or twisting may occur. Intestinal obstruction from Meckel's diverticulum may be due to volvulus, as illustrated by Case 1; or it may be due to invagination of the diverticulum into the bowel, causing intussusception, as illustrated by Case 2.

*Case 1.*—Patient is a woman 71 years of age, whose past history includes only one serious illness, that of gallbladder resection nine years ago. She has had five children, and otherwise has had good health. Menopause occurred at the age of 47.

Present complaint: Three days before admission to the hospital (March 12, 1928) the patient complained of acute pain in the right lower abdominal quadrant, recurrent in character, followed within the first twelve hours with nausea. Cathartic was taken, which aggravated the pain, and was followed by severe vomiting. From this time until admission to the hospital, all the symptoms became aggravated and a typical text-book description of an intestinal obstruction developed.

Examination before the operation revealed a rather thin elderly lady of fair color with an expression of distress on the countenance, vomiting rather frequently. The chest examination was essentially negative. Abdomen was distended with periodic peristaltic waves of distended loops of gut visible. A preoperative diagnosis of intestinal obstruction was made.

On opening the abdomen, a sanguineous fluid escaped. A loop of ileum beginning at the ileocecal valve and extending upward for about eighteen inches was markedly distended, bluish in color but still retained somewhat normal luster. At the upper end of

this gut was found a pear-shaped mass, the size of a peanut, the smaller end attached to the bowel, the larger end buried in the cecum, which caused a volvulus between the two. The mass was edematous and on pressure by forceps a mucous substance was liber-

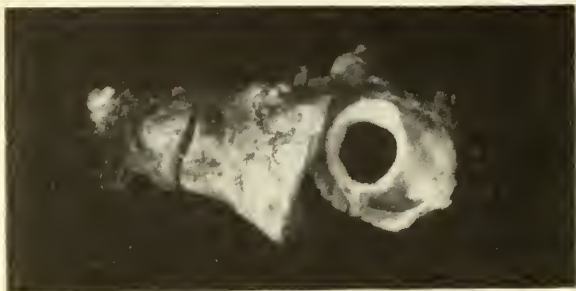


Fig. 1. Specimen of Case 1.

ated. Following removal, which relieved the obstruction, the mass appeared on section to have a hollow sac, with firm white fibrous walls, the closed end at the cecum. Microscopic examination showed a mucinous degeneration of part of the wall. The upper closed end appeared to have a minute lumen resected from the bowel. (Fig. 1.)

**Case 2.**—Illustrating intussusception by invagination of the diverticulum into the bowel is that of a young woman, 22 years of age, with a past history essentially negative, except that eighteen months before admission to the hospital the patient had an abortion, self-induced at three months.

**Present complaint:** About five days before entering the hospital (March 25, 1928), the patient developed cramps in the abdomen, most marked in the region of the epigastrium. These were irregular and associated with nausea, but no vomiting. Two days after the onset she seemed to be much improved, with recurrence again of symptoms on the third day, more severe in character. At this time there was some pain in the lower quadrant and she was seen by a physician, who made a diagnosis of appendicitis. The following morning the patient entered the hospital in an ambulance, with severe abdominal pain and nausea, and vomited once. At this time her temperature was 99 and leukocyte count 17,000. There were no localized pains except on deep palpation, showing very slight tenderness in the epigastrium and lower right quadrant. There was no rigidity nor even spasticity of the abdominal muscles and no evidence of a mass. Bi-manual examination was negative.

On account of the history of abortion eighteen months previous, it was thought best to observe the patient further. Twenty-four hours later the leukocyte count was 13,000. All the symptoms had subsided and the patient was very comfortable. Forty-eight hours later the leukocyte count was 8,100. Abdominal symptoms had disappeared with the exception of a mass at McBurney's point. This mass was movable, apparently the size of a small hen's egg, not tender to ordinary pressure.

On account of the history and the original leukocyte count, surgery was recommended, and on the third day in hospital the patient was operated upon, with a preoperative diagnosis of a retrocecal, suppurative appendix.

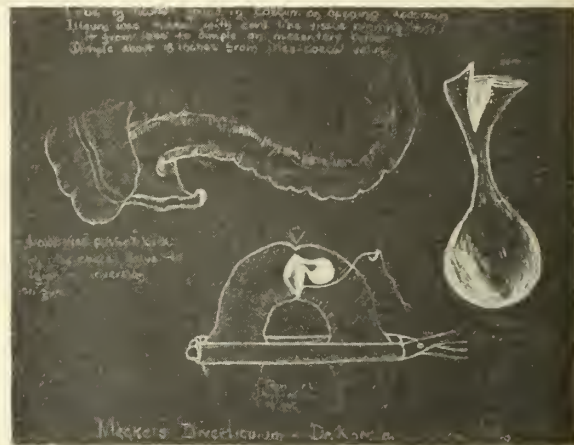


Fig. 2. Invagination of diverticulum causing intussusception, Case 2.

**Findings:** A low right rectus incision was made, splitting the muscle in the middle. Opening into the abdomen, the appendix was found congested in free anterior position, not inflamed. A mass the size of a large walnut was seen apparently free within the cecum just above the appendix. On palpation this mass felt cystic, could be freely moved and was attached to a pedicle about 6 inches in length around which pedicle the ileum was puckered. Pushing the mass through the ileocecal valve and toward the pedicle revealed an inversion near the mesenteric border of the ileum about 18 inches from the ileocecal valve. An attempt to force the mass through the inversion was unsuccessful. (Fig. 2.)

**Procedure:** The ileum was incised transversely over the mass described and the mass delivered. About 0.5 inch of ileum was incised. The intestinal incision was closed with through-and-through Lucken's intestinal suture. The serosa was reinforced with linen, invaginating the stump.

The above cases are reported because the lesions produced by Meckel's diverticulum are found so infrequently. As stated above, they occur in from 1 to 2 per cent of all individuals, and unless attention is occasionally called to its occurrence the surgeon may not think of a Meckel's diverticulum, when it is the offending lesion.

The Presidential Address, Minneapolis Surgical Society, was delivered by Dr. H. B. Sweetser.

#### PRESIDENTIAL ADDRESS

It is customary in most societies for the retiring president to give an address, and it is further customary that such address be not on a medical topic but rather that it be devoted to a review of the activities of the society and to making such suggestions and recommendations for the future as he may have formulated

from his experience while in office. With your indulgence I shall follow this custom. But, first of all, I wish to express my appreciation of the honor you have conferred on me, and to thank you for your coöperation, help and interest throughout the year.

Inasmuch as no detailed account of our inception and

successors, in preventing either of these objects being lost sight of.

The first officers were:

President, R. C. Webb

Vice President, S. R. Maxeiner

Secretary-Treasurer, A. A. Zierold.

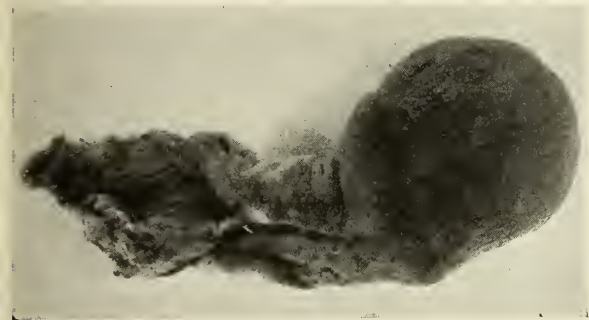


Fig. 3. Invaginated mass, Case 2, normal size.

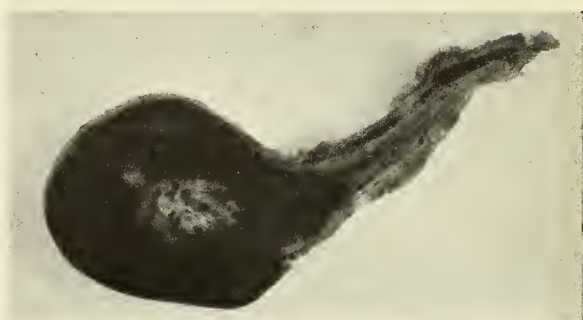


Fig. 4. Sagittal section of invaginated mass, Case 2.

early history is on record, and because such information may be of considerable interest in the future to our successors, I have thought it might be of value to introduce here a short résumé of such history.

The Society had its origin March 8, 1922, when nine surgeons, Drs. R. C. Webb, A. A. Zierold, G. R. Dunn, S. R. Maxeiner, S. H. Baxter, A. F. Bratrud, Kenneth Bulkley, James Johnson, and J. M. Hayes, met, discussed the need and possibility of such a society, developed tentative plans for its creation, and decided to invite to a meeting a number of other surgeons, sufficient for organization, and lay these plans before them for consideration.

This second meeting was held March 15, with twenty-one members present, the society was organized, a constitution adopted, and officers elected.

These twenty-one charter members were:

A. W. Abbott	M. J. Lynch
S. H. Baxter	A. T. Mann
A. F. Bratrud	S. R. Maxeiner
Kenneth Bulkley	F. A. Olsen
J. F. Corbett	F. H. Poppe
Geo. R. Dunn	A. C. Strachauer
R. E. Farr	H. B. Sweetser
James M. Hayes	R. C. Webb
James A. Johnson	A. E. Wilcox
A. A. Law	O. W. Yoerg

A. A. Zierold

Later when the constitution was printed, the name of Stephen H. Baxter, our newly elected president, was omitted from the list of charter members. This is to be regretted and should be rectified.

In studying the constitution of our society I find that no mention is made as to the object of its creation. Of course, it is assumed that we all know why, namely: First—to foster good fellowship among its members; and, secondly, to advance the study and cultivation of the art and science of surgery. I would therefore suggest that our constitution be so amended by inserting after the name an article entitled "Objects." This will be of benefit to ourselves and to our

For the following years the officers have been:

<i>President</i>	<i>Vice President</i>	<i>Secretary-Treasurer</i>
1923 and 1924 J. M. Hayes	J. A. Johnson	A. A. Zierold
1924 and 1925 A. E. Wilcox	A. A. Zierold	W. D. White
1925 and 1926 A. A. Zierold	S. H. Baxter	W. D. White
1926 and 1927 Emil Robitshek	S. R. Maxeiner	T. H. Sweetser
1927 and 1928 H. B. Sweetser	W. D. White	T. H. Sweetser
1928 and 1929 S. H. Baxter	A. T. Mann	T. H. Sweetser

During the six years of the life of the society, twenty new members have been admitted; two have died and two have resigned, leaving the present membership at thirty-seven. Of this number, during any one year, twenty-five have attended three meetings, nineteen attended four, thirteen attended five, eight attended six meetings, and four attended all: Only two showed no interest by absence from all meetings during the current year. The average attendance varied between ten and twenty-nine. These figures apply only to the last two years, as no record of attendance was kept before that.

In every year the schedule of meetings has been fairly well lived up to: In each of two years there were the full number of eight; in one year there were seven; and in each of three years there were six—in all forty-one meetings. At fifteen, or a little over one-third, the society was addressed by prominent outside surgeons. At twenty-six, or a little less than two-thirds, the scientific program was provided by the members themselves. Forty-four prepared papers were read by twenty-nine members and twenty-six cases and patients were presented. Practically every member either read a paper, held a clinic or presented a case and all entered into the discussions. The character of the papers read and the cases reported indicate a

high type of surgeons among our members, and for this we may be proud.

At the start it was planned that a monthly clinic should be held at some hospital by the surgeons active at that hospital, and that the members should attend. This was done for the first year or so, and those clinics given, which I attended, were well worth while; but they were early discontinued for various reasons, partly because the attendance was poor, but largely, I think, because the work of most of us is in private hospitals with private patients, and it was found difficult or impossible to arrange an interesting and instructive clinic on a stated date. Later it was recommended that the individual surgeon, when he had material of interest, should notify whom he pleased of the members, so that in this way members might avail themselves of the opportunity of seeing each other work. This is an excellent idea and should be encouraged more than apparently it has been up to the present. It is possible, easy to carry out, and I trust will grow and become routine with our members as time goes on.

The problem of where and how to carry on our meetings has been a difficult one, and is not yet solved. The first ones were held in the basement clinic room of the General Hospital at 8:00 P. M. Here the environment was not conducive to congeniality and good fellowship and the interest and attendance lagged. A change was made in the hour to 6:30 P. M. so as to start with a dinner to be followed by the program. Many of the meetings were held at the Elks or the Athletic Club. When a prominent surgeon was invited the supper was held at one of these clubs, and adjournment was then made to the Hennepin County Medical Society rooms for the scientific program. As it was thought necessary to provide a large audience for a distinguished guest, invitations to the scientific program were extended to all the profession. The result has been that the supper was slimly attended, the audience was large, but the society was submerged as a society and as a host. These meetings were successful from the scientific standpoint, but were failures from the standpoint of development of comradeship and friendship. A particularly disagreeable feature and an embarrassing one when entertaining a prominent outsider was the necessity of passing a plate to collect the price of the dinner and the tip, followed by the treasurer to see that no one failed in his obligation to pay. This year an effort has been made to fulfill more nearly the two objects for which our society was created: first and most important, I think, the development of close friendships and congeniality between men who are travelling the same road and doing the same work, even though they must be competitors; and second, and also very important, the cultural advancement of the members in the science and art of surgery. It is hoped there has been some measure of success, and that the changes have met the approval of the members.

The first radical change was that our attendance should be limited to the members and their invited guests. The second was that the dinners should be paid

for out of the treasury, private guests of individual members, however, being at the expense of such member. This decision was arrived at by the council after it was shown that the yearly dues would cover the expense without difficulty. It is hoped that this arrangement will make our meetings more congenial and in this way result in a larger attendance and closer ties among the members. A third innovation was the holding of three of the meetings at the homes of three of the members, and this innovation was well received, if one may judge from the expressions of opinion recorded in the secretary's minutes. The first of these, with the consent of the council, was at my house and was not intended to create a precedent.

The impression made upon me personally of the meeting addressed by Dr. Maclean of Winnipeg last September was that it was not an artistic success although scientifically profitable. I then conceived the idea that some better method might be evolved from a general canvass of ideas from the members. As a lure for a large attendance it was given out that there would be no formality, that smoking would be encouraged, and that thirst would be allayed. The attendance was large and many fruitful ideas were evolved. The idea of meeting at each others' houses appeared especially attractive; Dr. Bulkley offered his for the December and Dr. Corbett for the February meetings. Both opened, not only their homes, but also their hearts and their purses and we were royally entertained. These meetings have left such pleasant memories with those fortunate enough to be present that it is devoutly to be wished that the society may have many more such in the future. There is one proviso, however, which the society must insist on, when it accepts a member's invitation to meet at his home, and that is that the refreshments, cigars, etc., be provided out of the treasury. Any other plan would be unfair and will not succeed for the reason that many of us have not room to care for a large number and would feel they could not accept hospitality they could not return, and therefore would not attend. We must all feel that the Society, and not the individual, is the host on these occasions. In this connection it must be especially noted, and it is gratifying to record, that the scientific program did not suffer because of the sociability; the papers read were among the best the society has listened to and the discussion was informal, very general and worthwhile.

We had two strictly scientific meetings in January and April, one at the General and the other at the University Hospitals. These were fairly well attended and the material presented was of a high order and of much value.

Our March meeting deserves special consideration, as it radically changed the procedure formerly carried out when the society was addressed by an outside surgeon, *i.e.*, a supper, followed by adjournment to the Hennepin County Medical Society rooms and an audience from the entire medical profession.

This meeting was held as a banquet at the Nicollet

Hotel, the attendance was limited to the members and their invited guests, the address was made in the banquet room, and the discussion was general and unconstrained. After the meeting there was an informal social hour during which everybody had the opportunity to meet and talk with our guest, Dr. Phemister, who stayed with us until train time. The number present, about 50, eliminates the fear we have labored under that a large enough audience could not be secured to satisfy a prominent outside surgeon except by bringing in the whole profession. The large and well lighted room, the tables, daintily ornamented, the large attendance of members, most of whom were in formal evening dress, and the spirit of good fellowship gave a dignity to the occasion which was commented on by those present, and which, I feel sure, was pleasing to our guest. The general sentiment of those present was that it was an artistic success, enjoyable as well as profitable, and the hope was expressed over and over that we may have similar ones in the future.

One of the basic reasons for our existence, and (in the minds of many of us) possibly the main reason, is cultural, *i.e.*, the exchange of knowledge acquired in our surgical practice. All of us see cases a little out of the ordinary, or we develop a technic different from the common which we consider an improvement, or possibly do a little research. These should be passed on to the rest of the members, either as a patient presented, or a case reported, or in a formal paper. It is a mistake to hold back until we have something extraordinary to relate: as a matter of fact, the most worthwhile papers are those which deal with common things we all meet and are often puzzled about, provided they are well thought out and tersely told. The secretary ought to have material well ahead of the meetings, and ought never to be obliged to hastily summon volunteers for papers to fill in. Such papers are seldom worth while. There is room for only ten or twelve papers a year, and if everyone will remember the give and take principle and contribute as well as receive, no one need be called on oftener than once in three or four years—surely not an enormous burden for benefits received. Such a resolve by all of us will make our society a success and of weight in the community, and will redound to the benefit of each of us.

It might be well to consider, in this connection, whether it would not be an advantage to include certain surgical specialties in our scope, for example, gynecology, urology and orthopedics. With the restriction provided in our constitution there need be no fear that we will be overshadowed by their special expertness.

In closing I again wish to thank you for the honor you have conferred, and to say that my year of close association with the members has been a source of great pleasure and of great profit to me.

The scientific meeting was adjourned, followed by the business meeting.

T. H. SWEETSER, M.D., Secretary.

## PROGRESS

Abstracts to be submitted to Section Supervisors.

Members are urged to abstract valuable articles which they run across in their reading and send the abstracts to the physicians in charge of the respective sections. In order to avoid duplication it would be well to communicate with one of the section supervisors before the article is abstracted.

## SURGERY

### SUPERVISORS:

DONALD K. BACON,  
LOWRY BLDG., ST. PAUL

VERNE C. HUNT,  
MAYO CLINIC, ROCHESTER

**MULTIPLE MYELOMA:** Charles F. Geschickter, M.D., and Murray M. Copeland, M.D. (Arch. of Surg., XVI, 1928, No. 4, 807-863). This is an historical review, a description of the disease from the standpoint of incidence, etiology, pathology, diagnosis, and complications, together with descriptive charts and photographs.

The original description by McIntyre in collaboration with Bence-Jones in 1848 is given in detail.

From the authors' series together with cases from the literature, the incidence of multiple myeloma is as follows: 70 per cent of the cases are males, the disease composes .03 per cent of all malignancies, and the average age incidence is 55 years.

The chief symptoms are pain, tumefaction, and deformity. The pain varies from obscure rheumatic aches to excruciating root pain. Deformity is characterized chiefly by a dorsal kyphosis, deformity of thoracic cage, and that due to pathological fractures. The bones most frequently involved are the ribs, the lumbar and sacral vertebrae, and the skull, in the order mentioned.

Complications consist of a chronic nephritis with a non-protein nitrogen retention and associated low blood pressure, a chronic bronchitis, and emphysema. In association with the nephritic picture, the Bence-Jones bodies can be demonstrated in 65 per cent of all cases.

The prognosis is fatal, the average case being dead within two years after being recognized, regardless of the therapy.

The microscopic picture reveals a predominance of cells which Ewing describes as myeloblasts, whereas Bloodgood terms them plasma cells. The authors, however, describe them as hematopoietic cells which apparently remain within the bone mar-

row and are rarely found in large numbers in the general circulation.

An extensive bibliography is available.

H. R. FEHLAND, M.D.

**DIVERTICULA OF THE BLADDER:** Calhoun Stirling, M.D., and H. W. Rollings, Jr. (Ann. of Surg., LXXXVII, May, 1928, 742-749). Cystoscopy and cystography have shown the diverticulum of the bladder is no longer a rare condition, but may be present in 5 per cent to 7 per cent of cases seen during the prostatic age. Trabeculae and small sacculi are frequently seen in cases presenting obstructive symptoms, whereas the diagnosis of a true diverticulum is limited to those cases possessing a distinct orifice with herniation of the entire bladder wall, and excludes such anomalous conditions as urachal cysts. There are congenital and acquired factors in the development of diverticula.

Hyman reported thirty cases in children. The most common site for diverticula is at the upper and lateral margin of the trigone, especially in the region of the ureteral orifice. As long as drainage is adequate and infection absent the diverticulum is of no clinical importance. There are no symptoms pathognomonic of diverticula, but cystoscopy is a very accurate method of determining their presence. Cystoscopic findings should always be corroborated by a cystogram. The size of the diverticular orifice is no criterion of the size of the sac. A diverticulum of an ounce or more capacity with retention and inadequate drainage should be treated surgically. Many of the cases of poor functional results following prostatectomy are due to diverticula being overlooked at the time of operation.

Residual urine with subsequent infection readily lends itself to the production of calculi. Fifteen per cent of cases in one series had a stone accompanying the diverticulum. Occasionally carcinoma is found associated with diverticula.

KENNETH MURRAY, M.D.

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## PEDIATRICS

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### SUPERVISORS:

CHESTER A. STEWART,  
LA SALLE BLDG., MINNEAPOLIS

ROY N. ANDREWS,  
MANKATO CLINIC, MANKATO

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**EPILEPSY IN CHILDREN:** Hugh T. Patrick, M.D. (Amer. Jour. of Dis. of Children, April, 1928). Just what epilepsy is, no one knows. The author wishes to protest most emphatically against the too prevalent light and casual consideration that is given to minor petit mal attacks, such as momentary dizzy spells.

The incidence of the disease among the breast-fed members of the group was 5.66 per cent, while among the bottle-fed members it reached 57.1 per cent. From a consideration of the breast-fed infants, the conclusion is reached that the general health and state of nutrition of the mother, the quality of her diet and the care she gives herself and her child, are factors which largely control the presence or absence of the disease in such cases.

The facts that forty-seven out of the fifty-three nursing mothers ate large quantities of green vegetables, that only three out of fifty-three breast-fed infants developed rickets, and that two of these rachitic infants belonged to mothers who did not eat green vegetables would strongly suggest a protective influence in green vegetables against rickets.

It is evident that, as the equator or the Far North is approached, both frequency and severity of the disease diminish. High altitudes produce similar results. The rarity of the disease among the inhabitants of the frigid regions is usually explained by the protective properties in meats and oils, which make up the bulk of the diet.

The geographic location of New Orleans is considered the factor most responsible for the occurrence of the mild form of rickets in that locality. It is possible that good exposure to the sun of the tenement houses, the low type of buildings, playground facilities, the type of clothing and the character of the diet influence it somewhat.

R. N. ANDREWS, M.D.

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**THE INFREQUENCY OF SEVERE RICKETS IN NEW ORLEANS AND VICINITY:** C. T. Williams, M.D. (Amer. Jour. of Dis. of Children, April, 1928). Every child with active rickets responded more or less promptly to treatment with cod liver oil, regulation of diet and sun baths. A rise in the inorganic phosphorus content of the blood was the earliest sign of improvement, being noticeable in most cases within one month after treatment was instituted.

Green vegetables, such as spinach, turnips, carrots and cabbage, featured prominently in the diets of the nursing mothers. Fifty-four per cent of the children had fairly comfortable sleeping quarters, while the remaining 46 per cent fared badly in this respect. There was a direct relationship between the content of inorganic phosphorus in the blood and the percentage of possible sunshine for each month.

The diet, exercise, bowels, sleep and emotional life should receive adequate attention. The object of medicine is to suppress the fits and break up the habit, if the patient can take care of a sufficient dosage to permit its accomplishment. The author relies almost entirely on sodium bromide and phenobarbital. Sometimes a combination of bromide and phenobarbital is more effective than either alone. For children with cold hands and feet, especially if the children are of the heavy, sluggish type, the

author likes to add one dose of thyroid extract daily.

Briefly, the successful management of a case of epilepsy means a prolonged, vigorous campaign without intermission; one must be on duty all of the time.

No person can have epilepsy without a certain underlying cellular instability, the nature of which is unknown.

R. N. ANDREWS, M.D.

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## EYE, EAR, NOSE AND THROAT

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### SUPERVISORS:

VIRGIL J. SCHWARTZ,  
PHYS. & SURG. BLDG., MINNEAPOLIS

E. L. ARMSTRONG,  
205 W. 2nd STREET, DULUTH

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**DIAGNOSIS AND DIFFERENTIAL DIAGNOSIS OF OTOGENOUS BRAIN ABSCESS:**  
Robert Lund (*Acta Oto-laryngologica*, Vol. XI, Fasc. 3). Part II.—Brain abscess of otitic origin is due, in the great majority of cases, to chronic suppurative otitis media, and fully half of these are cholesteatomatous. In a small number the ear lesion is acute, while in the rare cases in which there are no evidences of ear involvement at all the history must be carefully checked. It is stated that a diagnosis of brain abscess can be made only when a possible initial focus may be shown. Half of all brain abscesses are due to ear disease.

The time of formation of a brain abscess seems to have no constant relationship to the time at which the otitis began; intervals of from 14 days to 68 years have been reported. The latent period is usually from two to six, occasionally ten weeks; rarely it happens that a well-formed brain abscess

may be present but quiescent for decades until activated by trauma.

The abscess course is divisible into four stages: initial, latent, manifest, and terminal. There are three large groups of symptoms: general body symptoms, general brain symptoms, including cranial nerve lesions, and local brain symptoms which depend upon whether the temporal lobe or the cerebellum is involved.

The general body symptoms are due to suppuration and are prominent only when the latent stage is prolonged. There is debility, a pale, sallow complexion, fatigue, loss of weight from loss of appetite, constipation, fever and often a chill.

Of the general brain symptoms, headache, which varies in location and intensity, is prominent. Often it may be on the same side as the diseased ear, but not always. There may be tenderness on percussion. Vertigo, nausea, sudden vomiting without relation to meals are also present. Slow cerebration, during which the patient is mentally clear but far away, is often found.

Optic neuritis and choked disc are found in one-fourth of the cerebral cases and one-half of the cerebellar cases. Inasmuch as fundus changes have been seen only in cases which show an increased spinal fluid cell-count, it is thought that both of these conditions are due to toxic influence on the cranial contents.

Marked bradycardia or slow pulse, in a patient who does not have heart disease, but does have some general brain symptoms, is of very great diagnostic value in brain abscess. There may also be photophobia. Cranial nerve lesions, with occasional evidences of irritation as well as of paresis, are found more frequently than in other brain diseases; most often the condition is a partial paresis of the oculomotor, and any of the structures to which this nerve is distributed may become involved. It is well to remember that in meningitis the abducens nerve is most frequently affected.

VIRGIL J. SCHWARTZ, M.D.

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## TRAINING CHILDREN WITHOUT FRICTION

How a mother learned to avoid battling with her children over the food they should eat is told in entertaining fashion in the July *Hygeia* by Ruth H. Kuever from her personal experience.

As the parents learned the principles of proper nutrition they determined that the child must eat the right things. "When the child ate reluctantly we encouraged, when she demurred we insisted, when she rebelled, we coerced," Mrs. Kuever confesses. The meal hour gradually became a battleground over vitamins.

A visit to the Preschool Home Laboratory of the Iowa Child Welfare Research Station at the University of Iowa opened this mother's eyes. She passes on to other mothers some of the things she learned.

The ingenious parent will dress up unwelcomed food in new garb; serve spinach in different ways; give only small amounts at first. Carrots may have to be ground to make them easier to chew. It is a good plan to grind meat.

Be sure that fruit is prepared so that children can handle it. Pineapple, oranges, baked apples and apricots should be cut in small pieces. An idea for eggs is to poach them in tomato juice and serve with the juice over them.

A small child enjoys serving himself occasionally. There is a flattering sense of importance in pouring one's own milk from a tiny pitcher. Then there is the psychology of atmosphere at the table. Threshing out the problem before the child is fatal, but any child will respond to diplomacy, Mrs. Kuever says.

## BOOK REVIEWS

Books listed here become the property of the Ramsey and Hennepin County Medical libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

### BOOKS RECEIVED FOR REVIEW

- OPERATIVE SURGERY.** J. Shelton Horsley, M.D., F.A.C.S., Attending Surgeon, St. Elizabeth's Hospital, Richmond, Va. 893 pages. 756 illus. Cloth, \$15.00. St. Louis: C. V. Mosby Company, 1928.
- SYPHILIS. A TREATISE ON ETIOLOGY, PATHOLOGY, SYMPTOMATOLOGY, DIAGNOSIS, PROPHYLAXIS AND TREATMENT.** Henry H. Hazen, A.M., M.D., Professor of Dermatology and Syphilology, Medical Department, Georgetown University, etc., 2nd edition. 643 pages. Illus. Cloth, \$10.00. St. Louis: C. V. Mosby Company, 1928.
- MODERN METHODS OF TREATMENT.** Logan Clendening, M.D., Assoc. Prof. of Medicine, Medical Department, University of Kansas, etc., and collaborators. 2nd edition. 815 pages. Illus. Cloth, \$10.00. St. Louis: C. V. Mosby Company, 1928.
- THE DUODENUM. MEDICAL, RADIOLOGIC AND SURGICAL STUDIES.** Pierre Duval, Jean Charles Roux and Henri Béchère, Surgical Clinic, Faculty of Medicine, Paris. Translated by E. P. Quain, M.D. 212 pages. Illus. Cloth, \$5.00. St. Louis: C. V. Mosby Company, 1928.
- CLINICAL GYNECOLOGY AND OBSTETRICS.** Rae Thornton LaVake, A.B., M.D., F.A.C.S., Assistant Professor of Obstetrics and Gynecology, University of Minnesota, etc. 281 pages. Illus. Cloth, \$4.00. St. Louis: C. V. Mosby Company, 1928.
- HEART DISEASE.** Harold E. B. Pardee, M.D., Assistant Professor of Clinical Medicine, Cornell University. 120 pages. Illus. Cloth, \$1.50. Philadelphia: Lea & Febiger, 1928.
- THE INTERNATIONAL MEDICAL ANNUAL—A YEARBOOK OF TREATMENT AND PRACTITIONERS' INDEX.** 46th year. Cloth, \$6.00. New York City: William Wood & Company, 1928.
- THE NEW YORK ACADEMY OF MEDICINE LECTURES ON MEDICINE AND SURGERY.** 319 pages. Cloth, \$5.00. New York: Paul B. Hoeber, 1928.
- A TEXTBOOK OF GENERAL BACTERIOLOGY.** Edwin O. Jordan, Ph.D., Professor of Bacteriology, University of Chicago and Rush Medical College. Ninth edition, thoroughly revised. 778 pages. Illus. Cloth, \$6.00. Philadelphia and London: W. B. Saunders Company, 1928.
- GONOCOCCAL URETHRITIS IN THE MALE.** For practitioners. P. S. Pelouze, M.D., Associate in Urology and Assistant Genito-Urinary Surgeon at the University of Pennsylvania. 357 Pages. Illus. Cloth, \$5.00. Philadelphia & London: W. B. Saunders Company, 1928.
- PRINCIPLES AND PRACTICE OF OBSTETRICS.** Joseph B. De-

Lee, A.M., M.D., Professor of Obstetrics, Northwestern University Medical School. Fifth edition, thoroughly revised. 1140 pages. 1128 illus., 201 in colors. Cloth, \$12.00. Philadelphia & London: W. B. Saunders, 1928.

**GYNECOLOGY.** Howard Atwood Kelly, A.B., M.D., LL.D., and collaborators. With 767 illustrations, 14 plates, and 1012 pages. New York: D. Appleton and Company, 1928.

Of the voluminous works of Howard Kelly, this volume is the most recent and perhaps the last, and the atmosphere of farewell attends it. "The day's work done, in the chiaroscuro of the evening I pen my last lines—." He dedicates the volume "To all members of the profession who take the torch to bear it onward to that perfect day when suffering and sorrow will have fled."

Various authors have contributed, and an enumeration of them and their subjects will indicate the scope of the book. The collaborators include R. Glenn Craig on Histology; Lawrence R. Wharton on Malformations, Sterility, Pelvic Abscess, Gonorrhea, and Tuberculous Salpingitis; Emil Novak on Menstruation, Amenorrhea, Dysmenorrhea, and Endocrinology and Organotherapy; I. C. Rubin on Tubal Insufflation; Richard W. TeLinde on Diseases of the Vulva, and the Appendix in Gynecology; Cecil W. Vest on Pruritus; George H. Gardner on Diseases of the Cervix; Lilian K. P. Farrar on Fascia and Ligaments of the Pelvic Floor; George Gray Ward on Cystocele, Prolapsus Uteri, Rectocele, Enterocoele, and Injury to the Pelvic Floor. Leo Brady has the chapter on Tumors of the Vagina; W. W. Scott on Sacral Anesthesia; Robert W. Johnson, Jr., on Backache; Robert M. Lewis on Extra-Uterine Pregnancy; Guy L. Hunner on Urethral Stricture; Curtis F. Burnam on Bladder Tumors and Radium; George Gellhorn on Protein Therapy; Robert E. Fricke on X-Ray and Ultraviolet Radiation; Reuben Peterson on Pneumoperitoneal Roentgenography; Grant E. Ward on Electrothermy; and Esther L. Richards on Psychopathology. The following chapters are written by the author himself; The Gynecological Examination, Diagnostic Aids, Dilatation and Curettage, Uterine Hemorrhage, Leukorrhea, Dyspareunia, Perineal Lacerations, General Principles of Abdominal Surgery, Abdominal and Vaginal Hysterectomy, Suspension of Uterus and Ovary, Pessaries, Uterine Tumors, Tumors of the Tubes, Bladder and Urethra.

The incomparable illustrations of Max Broedel lend their unique distinction to the volume; no less pleasing is the work of August Horn and Hermann Becker. The text, in its anatomical description and operative technic follows closely, clearly and accurately the illustrations, to the profit of each.

Each chapter is preceded by a brief outline of its contents. This feature, together with the unusually clear text and the illustrations, makes the perusal of the volume a pleasure. "I avoid incremental adjectives and adverbs," says the author, "especially the tiresome, use-

less 'very'—. Familiar nuisances in gynecological literature are the ever recurring 'case' and 'patient.' I hope I have not overworked my ingenuity hunting for substitutes."

Illustrations and text emphasize operative technic. This is particularly apparent in the extensive sections on pelvic tumors and on the procedures usually included under vaginal plastic surgery. It is unusual, to say the least, that but two operations for retroversion are described. Considering its prevalence in women, it is surprising to find so little on endocervicitis. In spite of the recent editorial in the *Journal of the American Medical Association*, there is a chapter on the use of pessaries.

E. C. HARTLEY, M.D.

OPHTHALMOSCOPY, RETINOSCOPY AND REFRACTION. W. A. Fisher, M.D., F.A.C.S., Professor of Ophthalmology, Chicago Eye, Ear, Nose and Throat College. 2nd Edition. 291 pages. Illus. Cloth, \$3.75. Philadelphia: F. A. Davis Company, 1927.

The above subjects have been greatly simplified by the author and in such a manner that all are easily understood. Ophthalmoscopic illustrations with accompanying explanations are well done.

The relationship implied between the general physician and the ophthalmologist is somewhat vague and may be easily misunderstood.

The simpler principles of optics have been reviewed in a capable manner.

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## DISLOCATIONS AND SIMPLE FRACTURES OF THE ELBOW

EMIL S. GEIST, M.D., and MYRON O. HENRY, M.D.

*Minneapolis*

THE excellent books of Cotton, and of Wilson and Cochrane, leave little of these common lesions to be described. However, it was thought not to be without interest to study one hundred and fifty consecutive cases of elbow fracture and dislocation as they appeared in the private practice of orthopedic surgery; to analyze these, and to divide them into their various types. As far as we know there exists no statement of figures as to percentage of occurrence.

In this study the questions of prognosis and treatment will only receive a few lines. This part of the subject is well covered in the above mentioned textbooks. It may be remarked here, however, that treatment should never be begun until an accurate diagnosis, based on the study of many *x-ray* plates, has been made. This presupposes a knowledge of the development of the epiphyses of the elbow. It always pays to make comparison pictures of the uninjured elbow when lesions of this joint are studied.

Elbow injury occurs at all ages. The youngest case in this series was four months old; the oldest seventy-seven years.

Tabulation of the cases according to age of the patient at the time of injury yields the following:

Age in years (inclusive)	Cases	Percentage
0 to 5 .....	30	20
6 to 10 .....	31	20.3
11 to 15 .....	20	13.33
16 to 20 .....	11	7.33
21 to 30 .....	30	20
31 to 40 .....	12	8
41 to 50 .....	9	6
51 to 60 .....	4	2.5
61 to 70 .....	2	1.3
71 to 80 .....	1	.6

It will be noted that in approximately 54 per

cent of these cases the injury occurred before the sixteenth year of life. Also that 20 per cent occurred during the most active period of life (21 to 30 years, inclusive).

The manner of injury was as follows (as nearly as could be ascertained):

- (a) Falls—110 cases. Of these there was direct injury (striking elbow) in 72 cases; indirect injury (falls on extended hand) in 38 cases.
- (b) Automobile accidents—23 cases.
- (c) Miscellaneous—17 cases.

These cases can be divided into "fresh" and "old" cases. The "fresh" cases can be divided as follows:

Seen on day of injury.....	7
Seen in first week of injury.....	25
Seen in second, third and fourth week of injury .....	36

The "old" cases were seen as follows:

1 month to 2 months.....	25
2 months to 1 year.....	36
1 year to 5 years.....	10
5 years to 10 years.....	2
10 years to 20 years.....	8
20 years to 25 years.....	1

The types of fracture and dislocation are divided in this series as follows:

*Dislocations—*

	Cases	Percentage
Backward .....	9	6
Backward dislocations with fractures .....	5	3.4
Internal lateral .....	2	1.4
External lateral .....	1	0.7
Dislocation of head of radius.....	3	2.0

Fractures—

	Cases	Percentage
External condyle .....	22	14.7
Internal condyle .....	11	7.3
External epicondyle .....	7	4.7
Internal epicondyle .....	4	2.7
Intercondyloid T-fracture .....	5	3.3
Supra-condylar .....	27	18.0
Dia-condylar .....	16	10.7
Fracture head of radius.....	16	10.7
Fracture coronoid process.....	2	1.3
Fracture olecranon.....	11	7.3
"Explosive" fracture.....	9	6.0

Backward Dislocation—9 cases—6 per cent (Fig. 1).

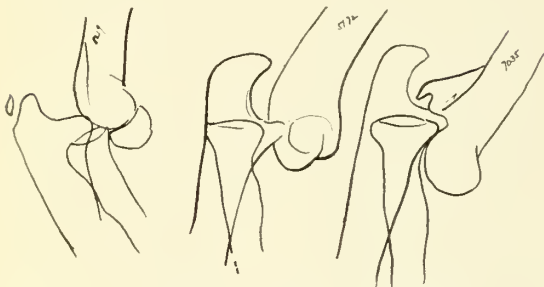


Fig. 1. Backward dislocation.

This is the most common type. It is easy to diagnose. Nevertheless, even in this day of the x-ray, the diagnosis is sometimes not made, for in this series of nine cases four were old, unrecognized, and unreduced dislocations. It may be said that an old unreduced dislocation presents a formidable surgical problem and that open operative surgery does not usually yield perfectly functioning elbows. On the other hand, early recognition and reposition, under general or local anesthesia, is easy and in such cases the prognosis is excellent.

Backward dislocation with fracture—5 cases—3.4 per cent

The fracture complication of the backward dislocations were as follows:

External condyle .....	22 cases
Head of radius.....	2 cases
Coronoid process .....	1 case

Following early reduction of the dislocation, the treatment of the fracture, to be discussed later, becomes the chief concern. It must be remembered that prognosis in these cases is to be guarded, there having occurred much ligamentous tearing in addition to the fractures.

Internal lateral dislocation—2 cases—1.4 per cent.

This is a rare injury. Two cases were seen and reduction was easy. In both cases the luxation was incomplete. After reduction was accomplished, the after-treatment was as usual, and the end-result in each case was good.

External lateral dislocation—1 case—0.7 per cent (Fig. 2).

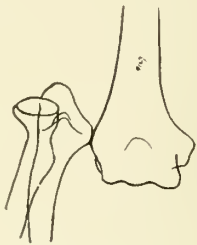


Fig. 2. External dislocation.

Another rare injury. In this case (75 year old woman) reduction (under local anesthesia) was easy. After-treatment consisted of early motion and heat. The end-result was a perfect elbow. Dislocation of head of radius—3 cases—2 per cent (Fig. 3).



Fig. 3. Dislocation head of radius.

This dislocation is not infrequent. Those in this series are all traumatic cases although it should be remembered that there exists a congenital type of this lesion which is not so very uncommon. The congenital dislocation is apt to be bilateral. The chief complaint of the patient is some soreness and inability to flex the arm. This is because the radial head impinges on the anterior humeral surface during flexion. Some fresh cases have been cured, by others, by making a new orbicular ligament from fascial transplant. In the cases of this series, relief and increase in range of flexion was obtained by means of resection of the radial head.

Anterior Dislocation.

We have never seen a case of this rare condition (Fig. 4).

*Divergent Dislocation.*

This also is an extremely infrequent type of injury which does not appear in this series. Only a few cases are reported (Fig. 5).

There exists an elbow condition which is rather frequent and which should be mentioned in connection with dislocation of the radial head and which occurs only in children. It is called

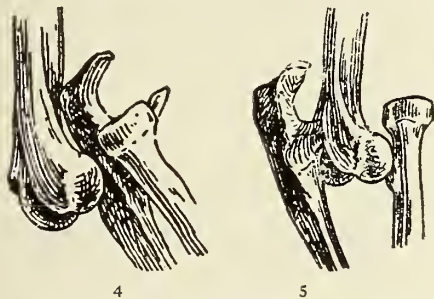


Fig. 4. Anterior dislocation (from Cotton).

Fig. 5. Divergent dislocation (from Cotton).

“pulled elbow,” or “Malgaigne’s Luxation.” Its pathology is not known, the most probable theory being that “the radial head is pulled part way down through the orbicular ligament and jammed there” (Cotton). The injury is caused by a sudden pull on the child’s extended arm. We have seen three cases in as many years (these not included in this study). The *x*-ray discloses nothing. The “dislocation,” if such it is, is reduced under an anesthetic; a sharp “click” being sometimes noted at the time of manipulation. Supination which was impeded before manipulation becomes again normal and as a rule the child uses the arm freely after a few hours. Prognosis is invariably good.

Not much need be said of the treatment of dislocations. Early diagnosis and reposition are of immense importance. A case rapidly becomes an “old” one. Some cases can become “irreducible” at three and four weeks and necessitate open surgical interference. The prognosis in cases where reduction is delayed is always poorer than in fresh cases. Cases of dislocated elbow are too frequently “missed”; always because the *x*-ray was not used.

*Fractures at and near the elbow.*

There is not much difference in types of fractures in children as compared with adults. The presence of epiphyseal lines and epiphyseal growth areas somewhat complicate accurate *x*-ray diagnosis in children. The other chief difference between the child and the adult con-

sists in the fact that in children the prognosis is much better. Pure epiphyseal separations are infrequent. There exists some broken bone in nearly every case.

The 130 cases of fracture in this series were divided as follows:

	Cases	Percentage
Lower end of humerus.....	92	61.4
Upper end of radius.....	16	10.72
Upper end of ulna.....	13	8.6
“Explosive” fractures.....	9	6

Diagnosis of fracture of the lower end of the humerus is easy with the *x*-ray. Treatment must be individualized in each case. The general rules for treatment can be summarized in the words anesthetic, reduction, splinting, flexion, early manipulation and use. It would not do to omit the name of Sir Robert Jones in this connection for it was he who popularized flexion treatment in elbow fractures.

*Supracondylar fractures*—27 cases—18 per cent (Fig. 6).

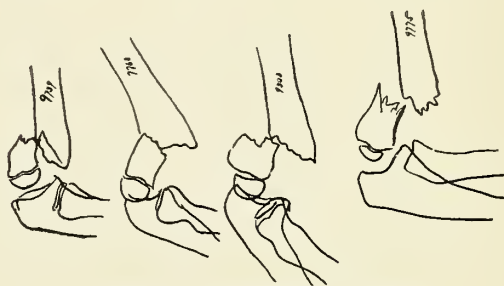


Fig. 6. Supra-condylar fracture.

This is an extra-articular fracture, and it is the most common in the vicinity of the elbow. Its diagnosis is easy.

*Diacondylar fractures*—16 cases—10.7 per cent (Fig. 7).

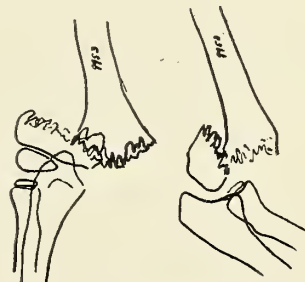


Fig. 7. Dia-condylar fracture.

It is necessary to remember that this is an intra-articular lesion; therefore, accurate apposition and early motion are very important.

*Fractures of the external condyle*—22 cases—14.7 per cent (Fig. 8).

In "setting" these, care must be taken that the "carrying angle" of the elbow is not increased or lost. These fractures occasionally do not unite. Three of this series were ununited and the loose fragment caused pain and discomfort for years. The removal of the fragment gave relief. Cotton advises attempting to obtain union by open operation and reports six successful cases.

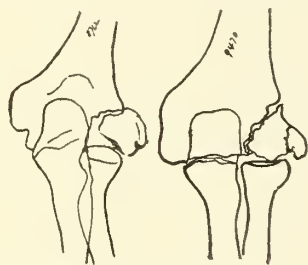


Fig. 8. Fracture of external condyle.

*Fractures of the external epicondyle*—7 cases—4.7 per cent.

A relatively unimportant injury with good prognosis. These fractures are reported to be rare. This series may be unusual in this respect. *Fracture of the internal condyle* (Fig. 9).

This is liable to be a serious type of lesion for two reasons:

1. Slipping of the fragment will result in a change of the important "carrying angle" of the elbow. It is important to maintain this angle, for changes of angle will result in weakness of the arm and deformity.

2. Injury of the ulnar nerve must be kept in mind as a possible complication as it occurs at times with this lesion.

*Fracture of the internal epicondyle*—4 cases—2.7 per cent (Fig. 10).

This is an extra-articular lesion. If there exists much displacement of the fragment, open operation may be indicated to keep it in place. Healing with displacement results in some weakness.

*Intercondyloid fractures (T-fracture)*—5 cases—3.3 per cent (Fig. 11).

This is a serious lesion. If there is much displacement of the fragments, open operation must be employed in the endeavor to bring the separated condyles together. Prognosis is serious.

*Fractures of the head of the radius*—16 cases—10.7 per cent (Fig. 12).

This lesion is liable to be serious no matter how unimportant it may look on the radiograph. Prognosis should be guarded and a perfect elbow should never be promised. Open operation often becomes necessary (total resection of the radial head). The fragment, or fragments, often do not unite even with perfect apposition.

*Fractures of the olecranon process*—11 cases—7.3 per cent (Fig. 13).

These fractures can be compared to fractures

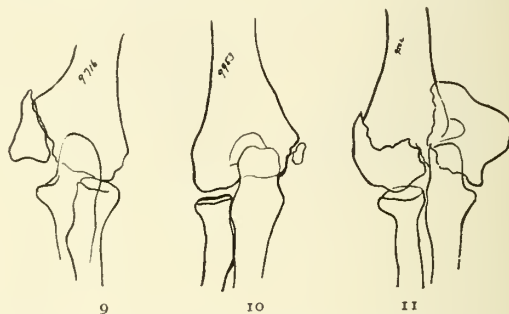


Fig. 9. Fracture of internal condyle

Fig. 10. Fracture of internal epicondyle.

Fig. 11. Intercondyloid fracture (T-fracture).

of the patella and divided into two classes—

- (a) Those with little displacement (up to  $\frac{1}{4}$  inch).

- (b) Those with much displacement (over  $\frac{1}{4}$  inch). In the cases included under (b) the lateral fibrous expansions of the triceps are torn and constitute a definite and important part of the lesion.

Treatment in cases included under (a) is simple. Rest should be instituted with as much

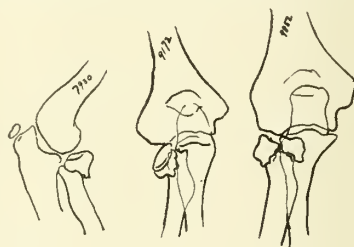


Fig. 12. Fracture of head of radius.

flexion as possible; flexion to be increased with caution during treatment.

Treatment of cases included under (b) is open operation. Here, as in the case of the patella, the most important thing to do is to bring the torn fibrous expansions of the triceps muscle firmly into apposition. When this is properly done the bone itself may at times require no suturing at all. Suturing of the fibrous tissue and bone must be firm enough to allow imme-

diate flexion of the elbow to at least 75 degrees, in which position the elbow should be put at rest and early after-treatment begun.

*Fractures of the coronoid process*—2 cases—1.3 per cent.

This is a rare lesion. Cotton says "it is almost one of the fictions of surgery." It is an unimportant fracture in that practically no treatment beyond fixation in the position of flexion is necessary.

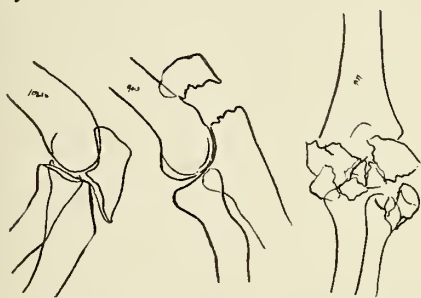


Fig. 13. Fracture of olecranon process.  
Fig. 14. "Explosive" fracture.

*"Explosive" fractures*—9 cases, 6 per cent (Fig. 14).

There occur cases, usually from a direct injury, such as striking the elbow on a hard pavement when falling from a height, which shatter all of the bones comprising the joint, into many pieces. Sometimes the force of the injury is great enough to drive some of the fragments into the adjacent musculature for an inch or two. It is as though the elbow has been exploded, wherefore our designation "explosive." The prognosis is always serious. One is tempted to think of open surgery to bring the dissociated fragments into something like decent apposition. Open surgery was attempted on three of the above cases while the remaining six were treated conservatively. The end-results in the cases treated "openly" were not as good as in the "closed" class. The conservative treatment therefore is the one of choice. It consists of putting the patient to bed, holding the elbow at about 75 to 80 degrees flexion and applying extension by the aid of the "Balkan" frame and weight and pulley traction combined with early active and passive motion.

## COPPER IN NUTRITION

The announcement made by a group of biochemical investigators from the University of Wisconsin regarding the function of copper as a supplement to iron for hemoglobin formation under certain conditions has created much interest. It is important to sound a warning against generalizations on the basis of these observations, for already copper is beginning to be lauded by uncritical and unscrupulous persons as a cure-all for the entire gamut of the widely different anemias. It was shown that a trace of copper supplied along with iron salts eliminated the anemia hazard from experimental diets fed to rats. Thus, copper appears to be a factor in the building of hemoglobin. For the present it is futile to speculate on the function of copper in nutrition. The most that can be asserted at this time is that we may need to reckon with traces of copper in some of the most fundamental reactions of the organism. (Jour. A. M. A., June 9, 1928, p. 1872.)

## OVALTINE

According to the manufacturer, Ovaltine "is a concentration of the nutritive constituents of malt, milk and eggs, flavored with cocoa." In other words, the product is essentially a chocolate-flavored malted milk to which has been added a small amount of dried egg substance. The company gives the following chemical composition of Ovaltine: "Protein, 14.2 per cent; Fat, 8.01 per cent; Carbohydrates 67.9 per cent; Ash, 3.76 per cent; Organic Phosphorus . . . 1.18 per cent." According to the manufacturers this "new pick-up drink from Switzerland" originated in Berne over thirty years ago. Two heaping teaspoonfuls of Ovaltine would produce about 50 calories. A glass of milk has an energy value of 170 calories. The power of inducing sleep, which is stressed in the advertising, is similar to that of other warm drinks taken just before retiring. (Jour. A. M. A. June 16, 1928, p. 1968.)

# THE PRESENT STATUS OF QUINIDINE THERAPY WITH AN ANALYSIS OF EIGHTEEN CASES

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THERE still obtains, among the medical profession, a major doubt concerning the therapeutic place of quinidine in the treatment of serious cardiac irregularities. The drug has been only very sparingly employed because of the real or supposed dangers accompanying its use and because, on the whole, a properly digitalized heart with a slow though still irregular rhythm seems to carry on its task adequately.

The value of converting an auricular flutter or fibrillation into the normal sinus rhythm, expressed in terms of circulatory efficiency, has been ascertained in a series of experiments performed by Blumgart and Weiss. These two men determined the velocity of blood flow in a series of 150 patients, ranging in age between eighteen and seventy-five. They injected an active deposit of radium into the cubital vein of one arm, noting the arrival of beta particles and gamma rays in the cubital arterial vessels of the other arm by means of an appropriate detecting device. In 50 normal individuals in whom venous pressure and vital capacity were normal the time velocity from arm to arm ranged from 15 to 24 seconds. The average time was 18 seconds, only nine individuals exceeding 20 seconds. In a given individual, successive determinations with varied dosages usually checked within two seconds. In twelve patients with auricular fibrillation the time velocity averaged 44 seconds with a range of from 28 to 60 seconds. This is an average of double the normal time. Further, in four patients treated, with quinidine, the time, after reversion of the heart to normal rhythm, was shortened, on the average, 8 seconds, with a range here of from 2 to 16 seconds.

Such changes from the normal velocity of blood flow suggest the obvious benefit of inducing normal cardiac rhythm wherever possible. This is the more pertinent when one considers the mechanical effect on the circulation of long continued fibrillation or flutter. In fact it has been ascertained by Frey that only 10 per cent of all perpetual arrhythmias run their course without causing definite circulatory disturbances.

Sandesson, in 1893, worked experimentally with quinidine and realized its greater effectiveness as compared to quinine. In 1918 Wenckebach introduced quinine in the treatment of cardiac irregularities, and Frey in the same year introduced quinidine therapeutically for the same purpose. Since that time, the literature on quinidine has increased steadily, there being, however, as yet no therapeutic unanimity of opinion concerning it. Many experimental studies are at hand, and pharmacological investigations are at present everywhere under way.

One of the most recent of the latter is the investigation undertaken by Hatcher. His results depend on intravenous injection of the drug. 95 per cent of the drug leaves the blood within five minutes, and its toxicity varies directly with the rate of its intravenous injection. He finds that 80 mgms. per kilo is a fatal dose for the cat, when the drug is injected at the rate of 5 mgms. per kilo per minute. Much smaller doses are sometimes fatal with rapid injection. He finds further that the essential elimination of the drug is practically completed in three to four hours, after which the animal requires as much to cause death as one not having received a previous dose. On the whole, quinidine behaves like quinine in the body. One added fact of interest is his conclusion that toxic doses of quinidine or quinine are not synergistic with the toxic action of ouabain (a digitalis body) on the heart.

The clinical and experimental work on the drug shows it to have a profound depressing effect on the heart muscle.

Eismayer, summing up the literature, finds most observers holding that the conduction time of the bundle is lengthened and with it the electrocardiographic P-R interval. With the exception of Love, it is supposed that the drug prolongs the refractory period. There is a general feeling that the ventricular rate is increased under quinidine, though the cause of this is at present uncertain. Experimental work on healthy hearts shows changes in the normal electrocardiogram consisting of flattening and widening of the

P and R waves, lengthening of the P-R interval, partial and complete block as well as plus or minus changes in the variation of the T wave. Korns, discussing experimental electrocardiographic changes, shows that in dogs it produces delay of both intra-auricular and intraventricular conduction and changes in the T wave. Left bundle branch block in a patient due to quinidine is also described by him. It is supposed that the coronary circulation responds to the drug with dilatation of the arteries while toxic doses induce ventricular fibrillation.

Drugs having an antagonistic action to quinidine are digitalis, nicotine, isopelletierin, chloroform, adrenalin, aconite, calcium, barium, and strontium. Potassium possesses a synergistic action.

The theories dealing with the cause of the success of quinidine in fibrillation and flutter are various. Lewis believes that the lengthening of the refractory period causes the circulatory wave to die, in the face of a lengthening of conduction time. Hoffman, who believes the cause of fibrillation to be an abnormal irritability of heart muscle, attributes the success of the drug to its depressant effect.

The dangers attendant on the use of the drug have been variously estimated by different observers. Broadly speaking, they fall into two classes. Deaths under quinidine have been either embolic or due to sudden cardiac failure. In the first instance the mechanical effect of a regular auricle in loosening a clot has been felt a probable cause; in the second instance, the direct depressant toxic action of the drug on the myocardium, already damaged by process of the disease, is held responsible. Eismayer has prepared a table showing the percentage of mortality in 934 cases, which is reproduced in Figure 1. It is very difficult properly to estimate the rôle of quinidine in the production of embolic phenomena. Before the drug was used, the occurrence of embolic death in cases of fibrillation was not, it seems to me, more rare than it is under quinidine. Certain factors seem to bear this out. If one goes over the literature, one finds that certain observers report no deaths from emboli; others, with perhaps fewer cases to record, report the reverse. Thus Riecker reports fifty-two cases with no deaths, whereas Bourwell and Dienaide show three embolic deaths in a series of

sixteen cases. Carr and Spoenemann had no deaths in sixty-one cases, whereas Schwenssen out of fourteen cases reports one embolic death. Stroud feels that embolic death has not been augmented by the use of the drug, his series of

Autor	Fälle	Todesfälle	
		Embolie	Herztod
Arjeff	43	—	—
Benjamin n. v. Kapf	27	—	1
v. Bergmann	9	—	—
Boden u. Neukirch	17	—	—
Bourwell n. Dienaide	16	3	—
Carr n. Spoenemann	61	—	1
Clark n. Kennedy	45	—	1
Clerc n. Noel-Deschamps	27	—	—
Ellis u. Kennedy	7	—	—
Haas	44	—	—
Hamburger u. Priest	18	—	—
Hart	15	—	—
Hay	265	7	10
Hewlett n. Sweemy	11	—	—
Jenny	18	—	—
Kanfmann	50	1	—
Klewitz	15	—	—
Korns	36	—	—
Levy	11	—	—
Riecker	52	—	—
Schwenssen	14	1	1
Sebastiani	10	—	—
Vicot, Maroni u. White	71	—	1
Wickner	15	—	1
Wolferth	12	—	—
Wybanw	25	—	—
	934	12	16

= 3,2 %

Fig. 1.

forty-two cases showing no such fatality. Clark Kennedy is impressed with the danger of embolic death, yet in 452 cases collected by Viko, Marvin and White, all cases of fibrillation under quinidine, the embolic deaths were no greater in percentage than in 200 cases of fibrillation in which no quinidine had been used.

The case for toxic effect on the myocardium seems to be much clearer. There is, in the first instance, a mass of experimental data available, all of which substantiates the tenet that the drug has a definite toxic, depressant effect on heart muscle. Lethal doses show ventricular fibrillation with great regularity and the evidence adduced from electrocardiographic tracings is cited above. Failure of circulation with the production of edema and respiratory difficulty is, in a measure, directly dependent on efficiency of heart muscle, and there is clinical evidence at hand giving quinidine a causal relationship with such failure. Eismayer recounts two cases, neither of which was made regular by the drug, in which, during its administration, symptoms of circulatory failure were much augmented. Frey thought that such toxic action might be the re-

sult of personal idiosyncrasy toward the drug; this is, however, hardly likely. A glance at Eismayer's collected table shows the apparent greater occurrence of death from this cause, in the proportion of seven observers to four in which death was attributed to embolus. Respiratory paralysis has been given as a cause of death, Reid, in 1922, reporting such a case and Von Frey two. Schott demonstrated the occurrence of respiratory paralysis in dogs following quinidine. Haas reported a case in which, after 43 grains of quinidine in three and a half days, the patient suddenly became pulseless and cyanotic, with a cessation of respiration. Recovery ensued. Clark Kennedy reports one death due in his words "undoubtedly to the combined toxic action of digitalis and quinidine on the myocardium, autopsy failing to reveal the cause of sudden death." He also reports a case of acute heart block almost ending fatally, with signs like those recorded in the patient of Haas. Lewis, in discussing the possible relationship of quinidine to sudden death, says that there is a possibility of long standstill of the ventricle consequent upon a slight raise in the auricular rate, or that a slowing or actual standstill of the ventricle may obtain at the moment of resumption of a normal sino-auricular rhythm.

The literature is largely consistent in its conclusions pertaining to contra-indications for the use of the drug. All cases of marked cardiac decompensation should not receive quinidine. Further, those in whom severe myocardial damage exists even without decompensation, and cases of fibrillation in which complete heart block exists should not be submitted to the drug. Minor variations from these groups are recorded by different men, largely based on individual judgment. Cases of acute endocarditis or myocarditis should, in Eismayer's opinion, be excluded, while Smith, Janney and Clarke exclude mitral fibrillations of long standing or those in which there is marked cardiac hypertrophy. Clark Kennedy emphasizes as contra-indications cases of active, progressing myocardial disease, rheumatic, infective, syphilitic or degenerative in origin. He feels that the drug should not be used in acute exophthalmic goiter fibrillation or in cases of mitral stenosis where tachycardia and decompensation immediately precede the onset of fibrillation. Heart block of any type and aortic disease are likewise, in his opinion, not favorable.

The bad clinical effects of quinidine on the patient may be summed up under headache, nausea, vomiting, bowel disturbances (largely diarrhea), vertigo and tinnitus. Increased heart rate and subjective feelings of nervousness are not uncommon. The use of the drug in the face of subjective discomfort depends on individual judgment. On the whole, minor disturbances do not demand its withdrawal. Clark Kennedy, who gave quinidine in very large doses, adds to the above list sudden attacks of abdominal pain and visual symptoms, such as transient attacks of failing vision or mistiness of vision. These eye symptoms came only with the use of large amounts of the drug and visual fields as well as retina remained normal throughout. They were accompanied by marked increase in ventricular rate as well as fall in blood pressure. He observed papular, scarlatiniform rashes in two cases, urticaria once, inflammatory edema of the face twice. Mild pyrexia closely associated with the height of drug dosage was seen in ten of his cases. Eismayer records the history of a woman who had profound collapse with cloudy sensorium and Adam-Stokes syndrome, who, because she had no previous or later attack of the same kind, was judged to have reacted to quinidine in this way. Cerebral symptoms with marked excitability, shrieking, diplopia and complete amnesia with respect to these events following them by a day, was noted in two cases by Clark Kennedy. No abnormal physical signs followed these attacks and he concludes that they were due to altered cerebral circulation rather than to direct or embolic action of quinidine.

The question of dosage and relative effect of quinidine on various types of fibrillation may, perhaps, best be discussed in connection with the series of cases reported here.

There is a difference of opinion about the type of case in which, with or without previous digitalis, the drug should be used. Clark Kennedy, writing in 1923, feels that quinidine should not be given when auricular fibrillation has existed for three years or more. The more recent view holds that in cases with moderate circulatory embarrassment a thorough course of digitalis preceding the use of quinidine is recommended. With the disappearance of edema and reduction of heart rate digitalis should be discontinued and quinidine begun. In general, one gives an initial trial dose to determine, as far as possible,

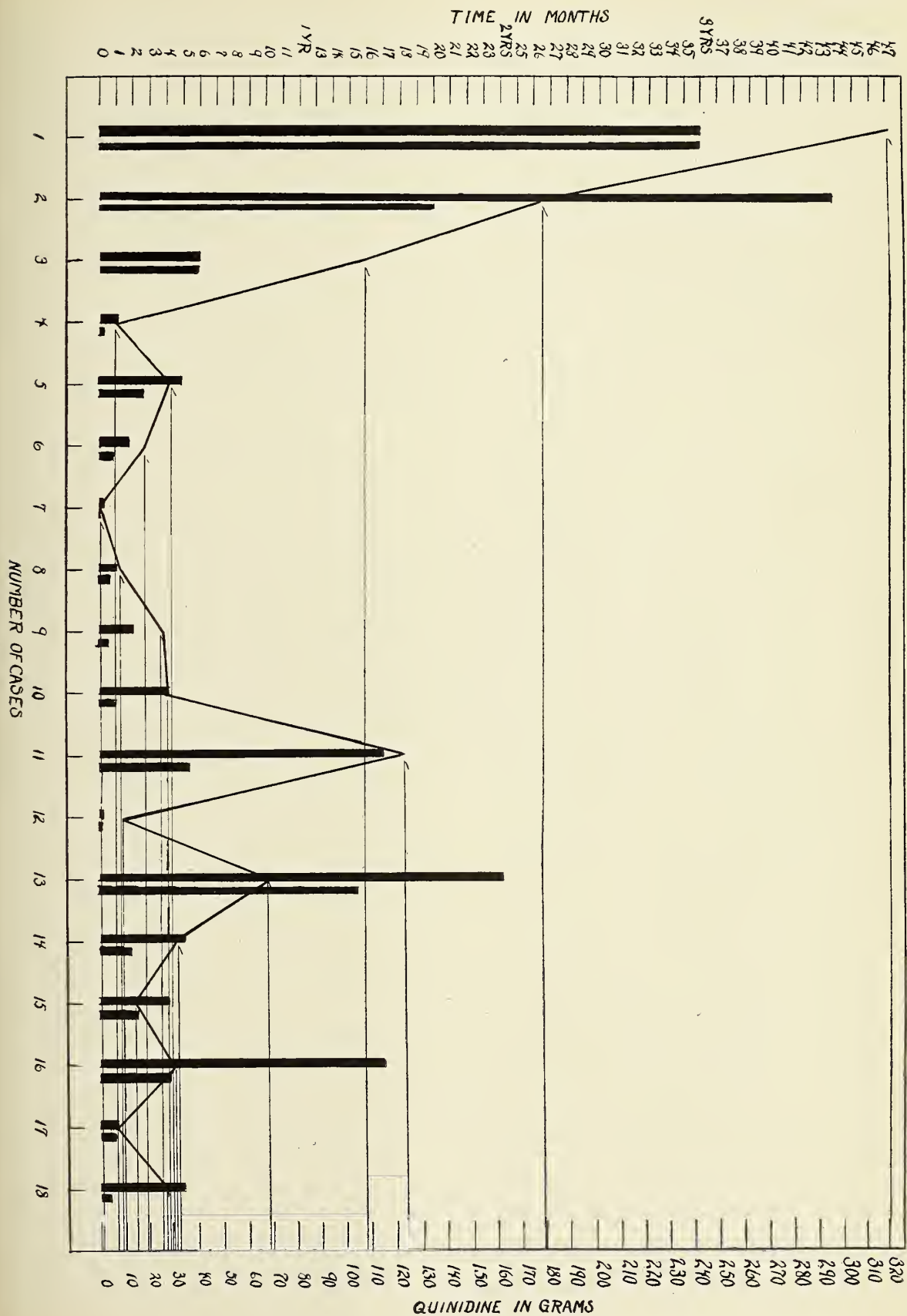
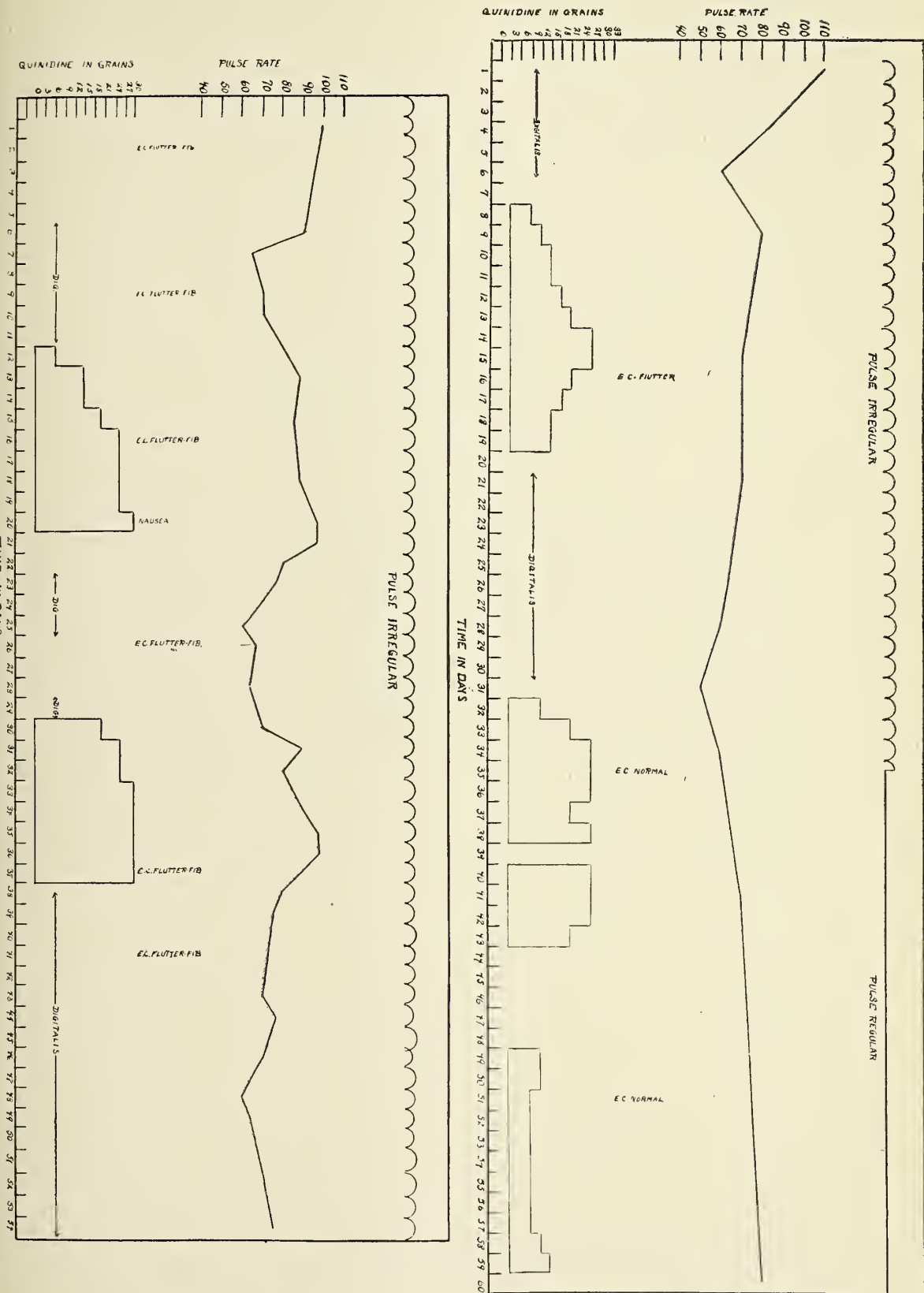


Fig. 2.

any individual sensitivity to the drug. For this purpose 3 grains of quinidine sulphate once or twice a day usually will suffice. Should marked subjective symptoms arise at this point one will perhaps be very hesitant about continuing. The next step admits of very wide variation indeed. The range in amounts given by different investigators is wide, from 6 to 35 or 40 grains in twenty-four hours. Eismayer's greatest total dose in any one given course of treatment was 12 grams, his work being the most recent on the continent. Weckebach gives from 2 to 2.5 gm. in twenty-four hours, the latter dose in very large individuals. Between two extremes, the dosage varies according to the point of view and experiences of each clinician. It is precisely here that the value and danger of quinidine become closely related, a situation the brunt of which must be borne by the experience and judgment of the clinician. So far, it is not evident that a definite proportion exists between amount given and result achieved. Roughly speaking, cases fall into three groups: those in which a regular heart being achieved it must be maintained by constant, small doses of quinidine; those in which quinidine, once regularity is obtained, may be discontinued; and finally, those in which the drug has no effect. This is illustrated by the tabular and graphic representation of eighteen cases studied at the Miller Hospital Clinic during the last three and a half years. The total amount of quinidine given varied from 320 grams, given over a period of three years, to 2 grams, given over a period of three days. The method of giving the drug was modified with each case, and succeeding graphs will give, in some detail, the procedure followed in individual cases. In all, the object in mind was to push the drug to its physiologically effective point, avoiding toxic manifestations chiefly by individual and careful observation. The graphic picture of total therapeutic relationship, illustrated by Figure 2, shows the comparative independence of amounts of quinidine and time under observation. Case 1, becoming regular under the drug, needed small amounts of it continuously to insure regular heart action, any cessation of the drug resulting in a recurrence of fibrillation. Case 2, on the other hand, continues regular with a total of 179 grams of quinidine. Cases 3 and 13 are somewhat comparable to the first case, whereas 11 and 16 are more like case 2. The typical procedure

in an individual case is graphically represented in Case 10 (Fig. 3). A total of 29 grams of quinidine was given over a period of two months and in the manner represented. There were minor evidences of cardiac decompensation such as slight edema of the ankles and a few moist râles in the bases, on admission to the hospital. The heart was rapidly and fully digitalized, and quinidine begun on the eighth day of hospitalization. A period of twelve days on the drug had no effect on the irregularity, whereupon digitalis was again given. A subsequent trial with quinidine was, as is shown, successful. Since that time the patient has again become irregular, undoubtedly belonging to the type that requires constant quinidine to effect a constantly regular heart. Case 9 (Fig. 4), graphically represented, is an example of unsuccessful quinidine therapy. Handling and dosage are almost identical with those in the case last shown, yet no effect was obtained. Further therapy, with larger amounts of quinidine, might, even here, result in regularity, but severe gastro-intestinal symptoms made such an action impractical. Case 11 (Fig. 5), which is next represented, shows an effective result achieved by the use of relatively large daily doses of quinidine over a period of a few months. Sixteen grains a day over a period of three months were required to achieve and maintain a normal sinus rhythm. At the end of that time the drug was discontinued and, with no quinidine during the last year, the pulse has remained perfectly regular in the face of rather sharp physical exercise, such as felling trees. There were several attempts made during the administration of the quinidine to reduce it in amount. Each attempt re-established fibrillation for a few hours until the amount of the drug was again raised to 16 grains a day. These trials, which represented irregularities of a few hours and variation in dosage of 7 grains, are not represented in the chart. Subjective symptoms of nausea, occasional tinnitus and nervousness were present during part of the time under treatment. No other effects were noticed and the electrocardiograms obtained after the establishment of sinus rhythm showed no abnormalities. It is obvious from the data that ordinary doses of quinidine would, in this instance, have failed to re-establish a normal cardiac mechanism. Further, it is interesting to note that this normal state of things has continued for a full year after cessa-

Fig. 3 (above) and Fig. 4 (below).



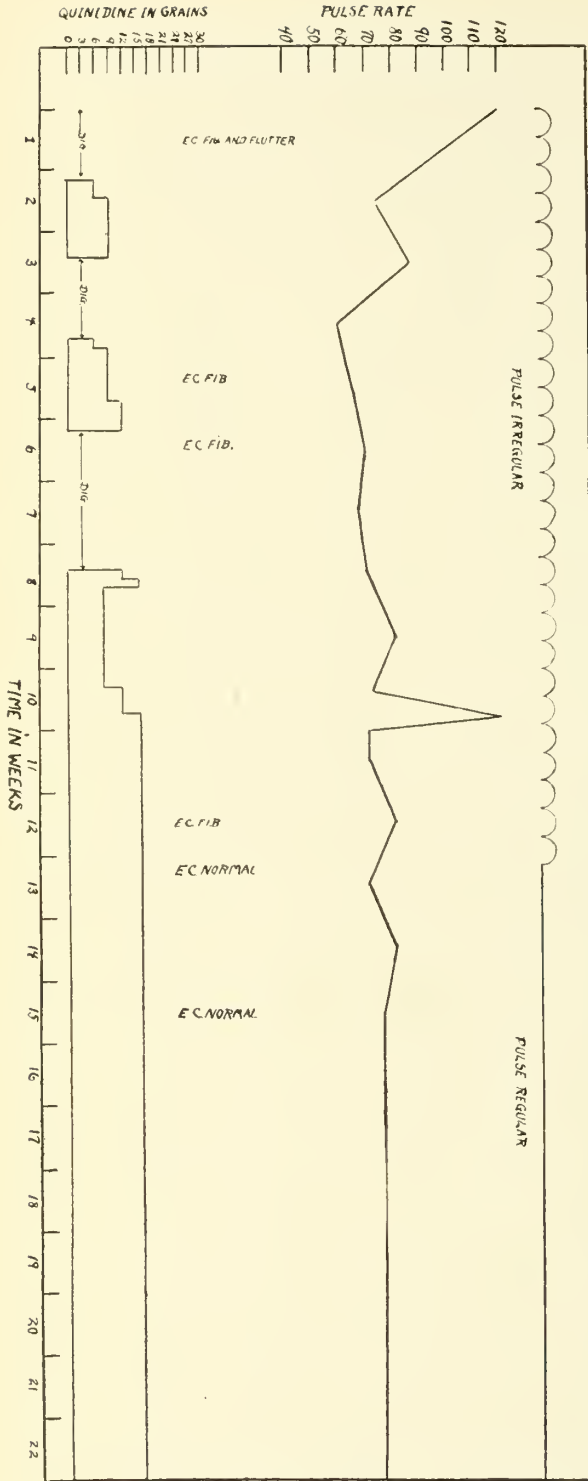


Fig. 5.

course of quinidine carried on daily over a period of three years, with an average daily dosage of 9 grains. The patient, a man sixty years old, was hospitalized with moderate evidence of cardiac decompensation, and throughout the observed period showed a very limited degree of cardiac reserve. Numerous electrocardiograms over a period of two years showed variable pictures of myocardial efficiency, ranging from inversion of the T in leads one and two, to branch bundle block. The end of the two-year period showed a normal electrocardiogram. A careful study of the tracings leads one to believe that there was no particular toxic effect of the quinidine on the myocardium unless a transient branch bundle block be so interpreted. No subjective symptoms attributable to quinidine were observed throughout all the three years. Death ensued at the end of that time, following six days of renewed cardiac decompensation. Just previously, the patient had been seen and appeared in all respects better than on previous occasions. The quinidine was not increased at this time, and there is no reason to suppose that it played any rôle in the final picture of muscle failure. The value of quinidine therapy in this case was undoubted. A re-established normal rhythm greatly helped the patient's cardiac efficiency, and undoubtedly prolonged his expectancy. His age, and the degree of myocardial involvement present, together with the signs of circulatory failure, placed this person in the class of those in whom successful quinidine therapy is doubtful. The event, together with numerous cardiographic tracings, not only justified its use, but showed no evidence of any depressant effect exercised by the drug on the myocardium.

Case 3, presenting a good therapeutic result, shows certain interesting points of difference from Case 1. The age of the patient, which is twenty-seven, and the lack of demonstrable etiology for the presence of fibrillation, are both in pointed contrast to Case 1. Again, the chart (Fig. 7) shows the type of quinidine administration used. The first period of the drug was, as will be seen, unsuccessful. Followed by a course of strophanthus administration, the second attempt with quinidine was entirely successful. For five months, up to the present, this patient continues regular on a daily amount of 9 grains of quinidine, cardiographic evidences showing an entirely normal heart. Whether or not quinidine

tion of the drug in the face of a rather severe test of physical exertion on numerous occasions. An interesting comparison may here be made with Case 1 (Fig. 6). This chart represents a

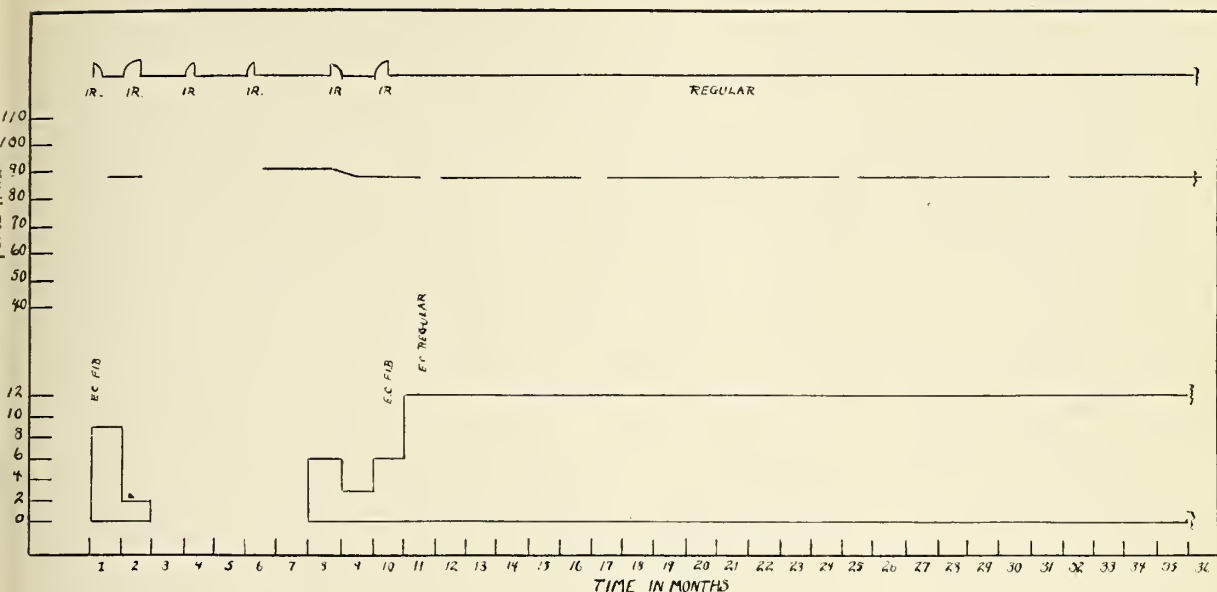


Fig. 6.

may later be discontinued, remains to be seen. Case 13 received quinidine in approximately the same amounts for one year and four months, after which no more was given. The ensuing year up to the present showed an entirely regular rhythm, with no further need for the drug.

Certain cases appear to be absolutely intractable. Such a one is represented in Case 18 (Fig. 8). With intervals of digitalis, this patient was given 29 grams of quinidine in fifteen days, one

twenty-four hour dose going up to 40 grains. There was no effect on the fibrillation. It is interesting to note that under each course of quinidine the pulse rate rose steadily, reaching 120 a minute. Some nausea and dizziness was also in evidence.

A review of the tabular data in these cases (Fig. 9) appears to bear out the recent continental point of view that age, type and duration of lesion are none of them factors of account in

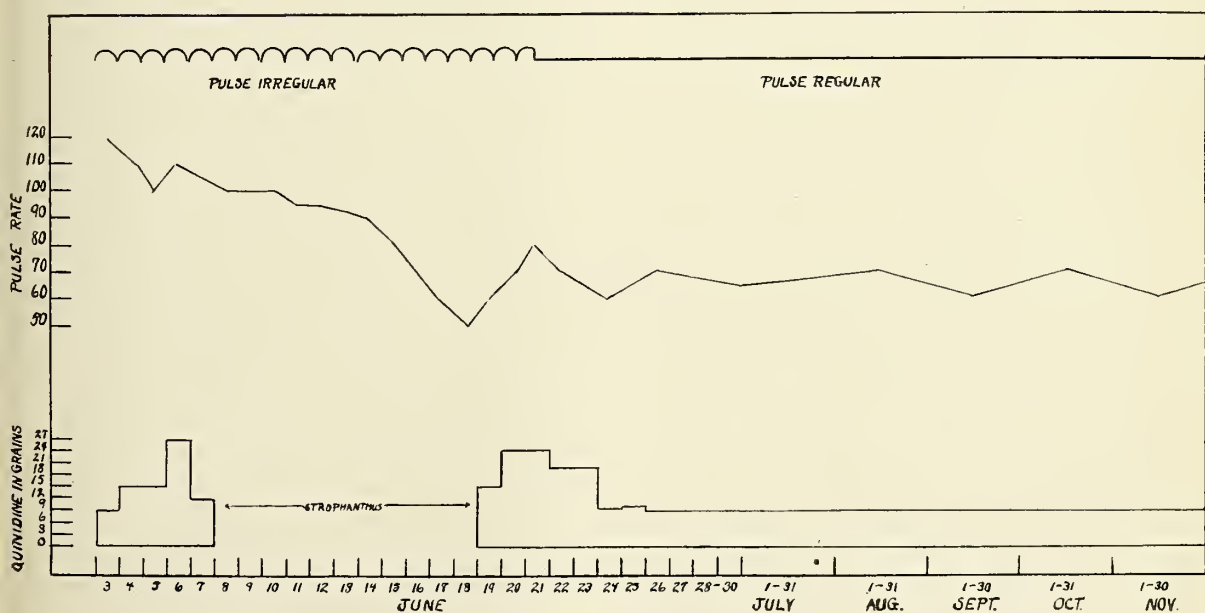


Fig. 7.

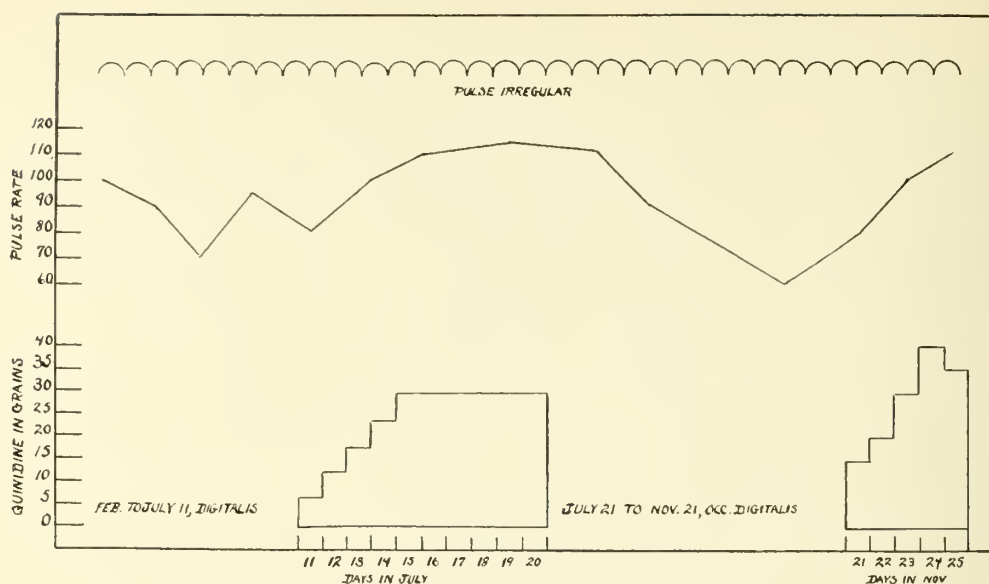


Fig. 8.

forecasting the success or failure of quinidine therapy. Etiologically the cases fall into six groups as follows:

- A. Four cases of unexplained etiology.
- B. three cases of fibrillation with toxic adenoma.
- C. Five cases of fibrillation with myocardial degeneration.
- D. Four cases of fibrillation with mitral disease.
- E. One case of fibrillation with exophthalmic goiter.
- F. One case of fibrillation with acute myocarditis.

No results were obtained in two cases of mitral disease, two cases with definite myocardial degeneration and one case associated with toxic adenoma. The one case in whom a transient effect was obtained might very well become permanent under adequate control with quinidine. This was a fibrillation in conjunction with mitral stenosis. In the eighteen cases here considered there is no reasonable emphasis on selective effects of quinidine on the basis of etiology, chance selections accounting for the slight variation observed.

The percentage of result obtained is illustrated by Figure 10. From this it will be seen that 66 per cent of all the cases was permanently restored to a normal rhythm. This, in every case save one, means a period of observed regularity of four months or more. Five per cent, or one

case, had a transient effect, and in 28 per cent there was no result. One has the impression that a more aggressive use of quinidine in several of the recalcitrant cases may have yielded a higher percentage of permanent results. The obtained percentage lies between high and low figures recorded in other clinics. Clark Kennedy reports 82 per cent restored to normal rhythm but does not specify the length of time during which normal rhythm prevailed. Eismayer shows that a transient effect was obtained in 58.5 per cent of 1,058 collected cases, while a permanent effect was obtained in 34 per cent of 666 cases. The criterion of permanence in these cases was three months.

The ill effects of quinidine noted in this group of cases were confined to the mild general disturbances. Practically all the cases receiving full therapeutic doses of the drug showed some tachycardia. Two people were definitely made nervous, in the subjective sense, feeling that they could not be quiet or restful and becoming easily on edge. Perhaps one-third of them had nausea and headache, the same number complained of anorexia and several were subject to tinnitus. No pyrexia was observed. One case perspired profusely while on the drug. There were in the entire series no severe toxic effects and no deaths traceable to quinidine. A careful review of the electrocardiographic tracings fails to show any demonstrable lengthening of the P-R interval or any of the other electrical changes recorded by

Case	Age	Diagnosis	Observed for	Quinidine for	Quinidine total gms.	No. effect	Trans. effect	Perm. effect
1	60	Au. Fib. Mitral	3 yr.	3 yr.	320			+
2	45	Au. Fib. Myo. Deg.	3 yr. 8 mo.	1 yr. 8 mo.	179			+
3	27	Au. Fib.	6 mo.	6 mo.	108			+
4	55	Au. Fib. Toxic ad.	1 mo.	5 da. 3 mo.	5.5	+		
5	48	Au. Fib. Toxic ad.	5 mo.	10 da.	31			+
6	69	Au. Fib. Myo. Deg.	7 wks.	3 da.	19	+		
7	70	Para. Fib. Ex. Goiter	3 da. 1 yr.	3 wks.	2			+
8	55	Trans. Fib. Toxic ad.	1 mo.	17 da.	9			+
9	25	Mitral stenosis	2 mo.	32 da.	27	+		
10	43	Double mitral Au. Fib.	4 mo.	5.5 mo.	29		+	
11	36	Flutter Fib.	1 yr. 5 mo.	5 da.	124			+
12	38	Par. Fib. Flutter	5 da. 1 yr.	1 yr. 4 mo.	8			+
13	61	Au. Fib. Myo. Deg.	2 yr.	2 mo.	70			+
14	67	Double mitral Au. Fib.	5 mo.	2 mo.	32	+		
15	44	Au. Fib.	4 mo.	2.5 mo.	15			+
16	67	Au. Fib. Myo. Deg.	1 yr. 5 mo.	4 mo.	32			+
17	60	Au. Fib. Erysipelas Myocarditis	6 mo.	20 da.	9			+
18	56	Au. Fib. Myo. Deg.	5 mo.	16 da.	29	+		

Fig. 9.

different observers. One person, mentioned in detail above, showed during the course of observation a branch bundle block; however, it was not felt that this was in any way related to the use of quinidine.

In conclusion, one is inclined to summarize as follows:

1. That quinidine is an effective agent in converting auricular fibrillation into a normal rhythm. Sixty-six per cent of the present series

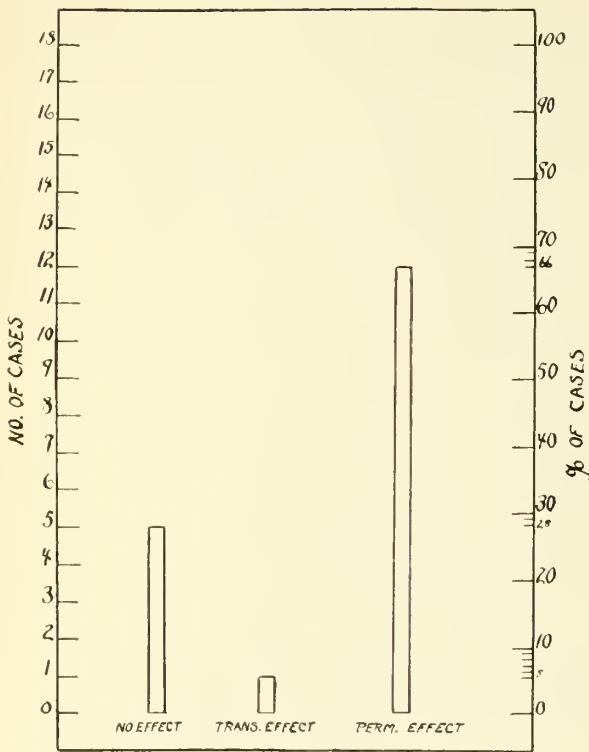


Fig. 10.

of cases was so converted over a period of five months or more.

2. Etiology and duration of fibrillation play very little rôle in predetermining the value of the drug.

3. The danger of quinidine, especially with reference to embolic death, has probably been over-rated. Cases with heart block, severe myocardial degeneration or marked decompensation

should, however, not receive quinidine because of its toxic effect on the myocardium.

4. The dose of the drug should be great enough to procure a physiological result in any given case. Its comparatively rapid excretion should be borne in mind, as also the fact that moderately large doses are often successful where small ones are of no avail.

5. Minor unpleasant effects of the drug are not necessarily indications for stopping its use. Tachycardia is a rather frequent objective sign noted during the administration of the drug but does not persist after its removal.

6. In cases of circulatory embarrassment or fibrillation with marked high rate and pulse deficit a thorough course of digitalis should precede the use of quinidine.

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## OCCUPATIONAL EYE SURGERY\*

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THIS paper will cover in more or less systematic form the type of eye surgery that is necessitated following injuries received in various occupations. It will begin with the minor injuries and culminate with the major. Greatest stress will be laid on the lesser injuries, the type of injuries you men are called upon to treat and dispose of in the routine care of railway accident cases. Very little new will be presented and my aim shall be to help you decide what to do with the various eye patients in order to return them to duty as early as possible. Many surgeons have so aptly said, "The early return to duty benefits both the employee and employer."

Working in the rain, wind, or dust often causes hordeola. This is an infection of Zeis's glands and is usually due to a staphylococcus organism. If seen early, hot boric acid compresses and yellow mercuric oxide ointment usually suffice. If late, free deep incision through the conjunctiva should be resorted to. Errors of refraction and systemic disorders should also be corrected.

Injuries to the lids are usually the result of laceration, contusions, and punctures. The nature of the wound depends on the type of inflicting instrument. If the wound is of the lacerated or incised type, approximation of the edges should be made. This may be done by horse hair or fine silk sutures. Personally, I always employ fine black silk for all suturing around the eye. It has the advantage of always being easily seen when the time for removal arrives.

In approximating lacerated wounds of the lids or conjunctiva always do so as early as possible and restore the eyelash line before the skin line is drawn together. Always try to remove foreign bodies from the conjunctiva before suturing. Subsequent treatment is usually for ecchymosis and should consist of cold compresses together with germicidal collyria.

Burns of the eyelids often result in severe contractions. Many clever operations have been devised for the correction of ectropion and entro-

pion. To discuss these in detail is not the province of this paper. I believe it will suffice to say that the proper early treatment will in most cases greatly decrease the morbidity. Especially is this true in the formation of symblepharon. All foreign material should be removed at once by forceful washing of the conjunctival sac with boiled water. If the substance causing the burn is acid, an alkaline wash should be used. Follow this cleansing with olive oil and atropine (1%). Free the adhesions between the bulbar and tarsal conjunctivæ daily by a probe; always try to prevent the formation of symblepharon and, if necessary, transplant a mucous membrane graft. Watch for corneal ulcerations, hypopyon, and panophthalmitis. Without a doubt these cases should be seen by an oculist and placed under his care at the earliest possible moment. At the best the results are unsatisfactory. Their later treatment would come under the head of plastic surgery, a subject I do not wish to open.

Injuries to the conjunctiva and sclera consist of foreign bodies, both free and imbedded, penetrating wounds and the resultant conjunctivitis. The foreign body should be removed under local anesthesia as early as possible. I am of the opinion that Butyn (2 per cent) is the proper anesthetic to use. Cocaine has a tendency to roughen and wrinkle the epithelial cells of the cornea, which Butyn does not do. The resulting conjunctivitis may be treated with a few drops of Metaphen (1-5,000) or Neo-Silvol (25 per cent) once or twice daily. Penetrating wounds of the conjunctiva or sclera should be treated as I have described under lid wounds.

Corneal wounds consist of foreign bodies, almost always imbedded, ulcers, pterygia and penetrating wounds. Foreign bodies should be removed under Butyn anesthesia with dull or sharp eye spud. These foreign bodies can often be located, as can corneal ulcers, by using a drop of 2 per cent Fluorescein. The spot shows a distinct green color. After-treatment varies with the case, from dark lenses to collyria and silver preparations.

\*Read before Great Northern Railway Surgeons' Association, Great Falls, Montana, June 23, 1927.

In any wound of the eye, or about the orbit, an intraocular foreign body should be suspected, and we should not be content until every method has been employed to prove its absence.

Instruction should be given in all industrial plants that no effort at removal of a foreign body shall be made, except under direction of the company oculist, and the following precautions should be taken to avoid infection.

In all shops a package of sterile eye pads and tubes of 1-3,000 bichloride of mercury ointment should be kept on hand. In case of accident instruction should be given to squeeze the bichloride ointment between the lids of the injured eye. An eye pad should then be applied and the case referred to the company oculist for further treatment.

Traumatic ulcers are usually rather resistant. It is well to remember the five layers of the cornea and to remember that an ulcer penetrating Bowman's membrane will leave a scar.

There should be relief from photophobia and pain. Holocain ointment (1 per cent) is of value here and should be employed in preference to cocaine. The eye should be atropinized. The ulcer may be touched directly with 2 per cent silver nitrate. Care should be taken to carefully watch for any rise of intraocular tension. Hot compresses of boric acid solution are valuable. An electric light bulb over a moist compress is a handy method. Col. Smith recommends the use of 10-20 minims of a 1-4,000 solution of mercury cyanide injected subconjunctivally. I believe the addition of salt to this solution is beneficial. Calomel dusted into the conjunctival sac proves efficacious in some cases. The following solution is applied to the ulcer, following anesthetization, by Woodruff:

Zinc Iodide .....	Grs. 72
Iodide .....	Grs. 120
Glycerin .....	Grs. 240
Aqua Dest. ....	Qs. 480

This is applied by topical application direct to the floor of the ulcer.

If the ulcer shows evidence of impending perforation, I release the intraocular tension by a paracentesis. Pain is lessened by this procedure and healing is more rapid. The actual cautery method is mentioned by de Schweinitz. One should be certain to cauterize all the ulcer floor. Personally, I do not employ the cautery. If the

ulcer is due to focal infection, the intramuscular injection of boiled milk will be a valuable aid. When the ulcer and resulting scarring becomes widespread a flap of conjunctiva may be dissected and drawn over the ulcer area. This conjunctivoplasty leaves a minimum scar.

Pterygia of traumatic origin, if they warrant surgical interference, should be treated by the method of McReynolds, which consists in transplanting and burying the corneal attachment.

Penetrating wounds of the cornea always mean a possible aqueous infection and one should anticipate an iritis or iridocyclitis. Both iritis and corneal ulcers should, according to Wm. Sweet, be treated with hot compresses, while traumata and conjunctivitis should receive cold.

When there is an injury penetrating the eye and the possibility of an intraocular foreign body exists, the case immediately assumes major significance even though it be otherwise insignificant. The earlier the foreign body can be removed the better the prognosis.

Intraocular wounds consist of penetration by a sharp object and penetration by small pieces of steel, glass, etc. If the foreign body is an opaque object, it should immediately be localized by the Sweet triangulation method, with which any competent radiologist is familiar. Attempt at removal, if the piece is magnetic, should be instituted promptly. This may be done through the wound of entrance or an incision through the cornea, if the object is anterior to the lens, or by posterior sclerotomy, if in the vitreous. A traumatic cataract will usually follow penetration of the lens or ciliary body by a foreign body and when it reaches the proper stage a lens extraction should be done. Iridocyclitis and retinal detachment are complications which may follow a penetrating wound of the eye. In the event of failure of removal of a piece of steel, the eye should be watched for siderosis and beginning sympathetic ophthalmia and immediate enucleation advised. A permanently blind eye should be removed as early as possible, as it is always a possible source of trouble. Shahan, of St. Louis, reports in the February, 1927, issue of the American Journal of Ophthalmology a case of sympathetic ophthalmia following evisceration of a panophthalmitic eye. Immediate enucleation of the shrunken globe was performed and after a very stormy course the remaining eye returned to normal vision.

I have four cases I wish to report to you today:

1. Penetrating wound of eye.
2. Ulcus serpens with a conjunctivoplasty.
3. Enucleation and gold ball implantation.
4. Magnetic foreign body penetration of the eyeball.

*Case 1.*—Mr. E. J., aged 64, was referred by physician from neighboring town. While walking in the woods in the twilight, he ran through a projecting twig which penetrated the conjunctiva and sclera of his right eye over the internal rectus muscle. When I saw him the right eye was chemotic and he was unable to keep the lids open. Vision in left eye was 20/40 and in right 10/200; tension was not increased in either eye; the fundus in right eye was visible and no abnormalities were evident. There was an abrasion of the cornea, and the conjunctiva and sclera were greatly injected. The eye was put at rest with atropine and cold compresses and the next morning, on examination, it was impossible to obtain a fundus reflex. The anterior chamber was filled with blood, and I was just able to get light perception. The eye was very painful and morphine was required for relief. The eye was treated expectantly but it continued to get worse and at the end of a week there was decrease in vision of the other eye and an enucleation was decided upon. Immediately following the enucleation the patient felt better, had no pain, and the other eye returned to its former visual state in three days. Section of the removed eye showed a diffuse panophthalmitis. Undoubtedly, there was a beginning sympathetic ophthalmia in this case which responded promptly to enucleation of the offending member.

*Case 2.*—Mr. J. W., aged 62, a painter by trade, was referred to me for persistent corneal ulcer which refused to respond to treatment. Various measures had been instituted to heal this ulcer without result. There evidently was a decrease in the corneal nutrition resulting in protracted delay in repair. It was a typical Ulcus Serpens and a conjunctivoplasty was decided upon. This ulcer was quite central and a bridge of conjunctiva was utilized after the method of Kuhnt. After a few days the conjunctival bridge was removed

and replaced in its original position. The ulcer healed promptly and a minimum scar remained. Vision was 20/40 the last time the patient was seen, which was nine months after operation.

*Case 3.*—Miss J. S., aged 18, a student. At the age of eleven years this girl had fallen on a pair of scissors and they had penetrated the eyeball through the cornea. There was a dense corneal leucoma with a soft eyeball. She consulted me for cosmetic reasons and requested an enucleation and subsequent fitting of an artificial eye.

The eye was enucleated and an 18 mm. gold ball implantation was done according to the Sweet modification of the Frost-Lang operation. The recti muscles were sutured to the capsule of Tenon and the capsule closed over the gold ball by continuous silk sutures. Then the conjunctiva was sutured over the capsule by continuous silk sutures. The movement of the artificial eye when last seen was so near the excursions of the good eye that one must needs watch closely to detect its artificiality.

*Case 4.*—Mr. L. S., aged 58, was struck in the left eye by a piece of rusty iron from a rivet. The wound of entrance was evident in the inferior nasal quadrant of the cornea. The iris was adherent to the corneal wound and it was impossible to see the fundus. The vision in the good eye was 20/30 and in the injured eye, fingers at three feet.

The x-ray showed a definite foreign body located 2 mm. back of the cornea, 0.5 mm. to the nasal side and 2 mm. below the horizontal line, after triangulation by the Sweet method. Its size was  $2 \times 1 \times 0.5$  mm. Fourteen attempts were made by myself and other ophthalmologists to remove the piece of steel with a giant Volkmann magnet and large Rolle without success. A cataract was forming rapidly and the patient was informed that two paths were open to him, an immediate enucleation or a policy of watchful waiting with a cataract extraction later on if the eye quieted down. He elected the latter and the eye was watched for evidence of siderosis or uveitis, which did not develop. There was no suggestion of sympathetic ophthalmia. When last seen the cataract was fully developed and an extraction was advised, which the patient says he will have sometime this summer.

#### LENS EXTRACT (MULFORD) NOT ACCEPTABLE FOR N. N. R.

The Council on Pharmacy and Chemistry reports that Lens Extract, marketed by the H. K. Mulford Co., is stated to be "A sterile solution of the protein from the eye lens of cattle, standardized to contain 2 per cent protein with 0.5 per cent phenol added as a preservative." The product is based on the work of Dr. A. Edward Davis and has been under considera-

tion by the Council since 1924. A review of the available evidence and the advice of the Council's consultants indicated that not only is there no evidence that the substance is beneficial but that, being useless, the employment of lens extract in the treatment of cataracts is likely to result indirectly in harm to the patient suffering from the disease. The Council therefore declared Lens Extract (Mulford) unacceptable for New and Non-official Remedies. (Jour. A. M. A., June 9, 1928, p. 1871.)

## THYROID DISEASE REQUIRING SURGERY\*

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ONE hundred years ago, exophthalmic goiter was first described by Parry, and a few years later by Graves. It was not more than half a century ago that important writings appeared on the subject. No doubt thyroid disease was as prevalent in the past centuries as at the present time, and, if this be true, an untold amount of suffering is spared by the present-day method of treatment.

The pioneers who blazed the trail in thyroid surgery found no signposts or guides to follow. They were like the mariner sailing the unknown seas without a compass. There were uncertainties connected with the work and their paths were beset by many obstacles. They were in doubt as to the cause of the complaint, and they were not agreed about any special form of treatment. From surgery there was a mortality of from 20 to 30 per cent. The severe post-operative crises, the dyspnea and collapse of the trachea following surgical procedure, and, often, myxedema, tetany, or death discouraged all but the bold and those who had the courage of their convictions. It drove many surgeons into less hazardous undertakings. Other means, less dangerous, were sought. Diet, rest, electricity, massage, and x-ray have had their advocates, but most of these methods have been found wanting.

Because of the frequent and apparent relationship between thyroid disease and impaired functions of other organs of the body often presenting pronounced and dangerous symptoms, an intensive study was undertaken all over the world. Research workers, clinicians, and surgeons endeavored to solve this enigma. They tried:

1. To determine the cause of goiter and how to prevent it.
2. To learn the inter-relationship of the thyroid and other organs of the body.
3. To chart the symptoms so as to make a diagnosis less difficult.
4. To formulate some satisfactory classification.

5. To establish a definite form of treatment.

6. To select cases best treated by surgery and to adopt a safe and satisfactory operative technique.

It was known that iodine was a constituent of the thyroid and that the disease was more prevalent where this element was absent from the food or water.

Trusseau discovered by accident in 1863 that iodine had a very beneficial effect on a case of exophthalmic goiter. The heart, which was very rapid, became slower in action, and the pronounced nervous symptoms greatly improved. This discovery was not followed up by the profession and was lost sight of for a time.

Marine and Kimball<sup>1</sup> tried out the use of iodine as a preventive measure in the school children of Akron, Ohio. It was noted that small quantities of iodine in young children had no bad effect even on small colloid goiters, and it seemed to prevent the development of the disease in later life. These experiments were followed up by other clinicians with similar results, so that the profession has for several years recommended the use of iodine in young children in small quantities as a preventive measure. It has been shown, however, that the injudicious use of iodine in older people with adenomatous goiter is occasionally followed by hyperthyroidism.

In operating severe exophthalmic goiters, new methods were devised to lessen the reaction. The striking results obtained in successful operations and the amelioration of the symptoms in other cases began to encourage the surgeons to follow up this form of treatment. Crile worked out a scientific psychological plan in which ligation was practised one or more times preliminary to a more extensive operation for the removal of part or the major portion of the gland. Other operators employed similar methods. There was a more careful selection of cases thereafter and crises following operations became less prevalent. The metabolic rate was found to be a fairly reliable guide in determining how serious the toxemia was.

\*Read before the Hennepin County Medical Society, Minneapolis, Minnesota, Dec. 5, 1927.

The greatest advancement in the treatment of thyroid disease was made after Plummer's report<sup>2</sup> in 1922. He recommended iodine in exophthalmic cases as a preliminary treatment to operation. His plan was immediately adopted by the surgical profession and the results have been marvelous. The metabolic rate and pulse become lower, the patients go to the operating room in a much less frightened and nervous state, they endure the operation with less reaction, and a rapid improvement follows.

#### CLASSIFICATION

Some attempt has been made to classify thyroid disease: (1) grossly and clinically; (2) microscopically and pathologically; (3) chemically; and (4) physiologically. Inasmuch as there are multiple clinical symptoms in a case of disease of the thyroid, as there are often two or more forms of recognized change present in the same gland, and as one phase of the disease may merge into the other, it becomes difficult to make a distinct division that is satisfactory.

Plummer<sup>3</sup> has offered a simple classification which is quite generally adopted by the profession, namely:

1. Colloid goiter  
First stage hypertrophy and later colloid (occurring commonly in young girls at puberty)
2. Adenomatous goiter  
Without hyperthyroidism  
With hyperthyroidism
3. Exophthalmic goiter (Graves' or Basedow's disease)
4. Tuberculous, syphilitic, or malignant goiter  
On the basis of the physiology, chemistry and pathology of the gland, disease disturbances may be classified, according to Marine,<sup>4</sup> as:
  1. Thyroid insufficiencies
    - a. Simple goiter
    - b. Myxedema
  2. Graves' disease

#### ETIOLOGY

Food lacking in vitamins is supposed to have some influence in the development of a perverted function of the gland. There are some physicians who claim that foci of infection may act as causative factors. This may be possible through interference with the normal function of the gland and related organs of the body.

Dr. O. Lanz<sup>5</sup> has emphasized the climate and environment in certain localities as having an influence on goiter and its development. For instance, hyperthyroidism is more often present in the goiters of Switzerland than in those of Holland.

#### PATHOLOGY

It has been suggested that the thyroid acts as a detoxicating agent for the blood, and in an unhealthy state of the gland there is a backing up of the toxins in the blood. This theory seems to be a sound one. It may be the lack of iodine in the thyroid that results in the diseased condition of the gland, which lessens the detoxicating power of the gland and allows toxic substances to accumulate in the blood, causing the grave general symptoms and producing greater pathological changes in the gland itself.

It is known that an innocent goiter may suddenly change into a toxic variety seemingly through some emotional shock, injury or intercurrent disease.

#### SYMPTOMS

Colloid goiters usually occur during adolescence, pregnancy and at menstruation. The enlargement of the neck is smooth and uniform unless adenomata are also present. Any symptoms are due to pressure.

Adenomatous goiters are usually asymmetrical and nodular and may cause pressure. The symptoms are insidious. The course is variable, often extending over many years. There may be a history of repeated attacks of hyperthyroidism.

In exophthalmic goiters, several of the following symptoms and findings may be present:

The onset is usually acute, continuous or characterized by periods of exacerbation and remission. Exophthalmos and tumor are frequently absent. There is usually loss of weight and strength. The quadriceps extensor muscle is weak, and climbing stairs is a difficult task. Nervousness and sleeplessness are present. A thrill or bruit is usually found. The appetite is often increased. Definite fine tremors of the hands and feet and quivering of other muscles are present at times. Tachycardia and rapid pulse is typical. The basal metabolism may be increased plus 15 to plus 90, and there is in-

creased surface temperature and excessive perspiration.

#### DIAGNOSIS

It is certain that thyroid disease does not escape the attention of the physician today as often as it did ten to twenty years ago. So much literature has been placed before the medical profession that no regular practitioner will escape the bombardment of these articles. Clinics have been held throughout the world, even in the rural districts, so that each physician is bound to hear of the importance of goiter, and many cases which he formerly treated and classified as cardiac deficiencies or gastro-enteritis, he now investigates more thoroughly.

More cases are brought to the surgeon's attention in the first stages. Therefore, future statistics will, no doubt, show a much earlier operative treatment and, in consequence, a lower mortality rate.

Riggs,<sup>6</sup> as quoted by Ghent, has stated that some cases which he formerly treated for neurasthenia with palpitation, restlessness, and insomnia were really cases of toxic goiter.

The x-ray is useful in the diagnosis of an intrathoracic, substernal, or subclavian goiter, and it should be used if there is any question about the extent or location of the growth in any case. Calcareous deposits may be discovered by this method as well. It forearms the surgeon so that he is prepared for the contingency.

The substernal goiter is sometimes overlooked, especially when the gland is small and congenitally low. Severe symptoms may arise from its presence before the disease is recognized. Goiters may progressively descend and enter the mediastinum. The destruction of the tracheal rings may occur from prolonged pressure or calcareous deposits. When this happens, serious consequences may follow.

The metabolic rate should invariably be taken. An elevated reading between plus 20 and plus 90 may be obtained in the exophthalmic, but in the colloid or adenomatous type without toxic symptoms, the rate is usually normal. Evidently some of these latter are latent hyperthyroid cases as observed in a recent one of my own where there was a sudden rise from plus .03 to plus 37 eight days after operation, showing a definite reaction.

A carcinoma may be suspected where the usual

symptoms are absent, and where there is an ulceration or discharge into the trachea with pain and some odor. The gland is hard and irregular, but small. An abscess may have formed from infection.

#### PRELIMINARY TREATMENT

For nearly a century iodine has been employed in the treatment of thyroid disease. It has been used internally and externally and in every form possible, but in uncertain doses. No doubt, it has often been of great benefit without much scientific foundation for its use.

When the benefits of Lugol's solution were demonstrated as a preliminary treatment before operation for exophthalmic goiter, a right-about-face was executed and surgeons began to discard ligations for a complete operation.

Bliss<sup>7</sup> states that:

"Colloid goiters in adults are benefited by iodine, but the patient requires careful supervision.

"Benign adenomata are harmed by iodine and should be removed before they become toxic.

"Exophthalmic goiter requires both medical and surgical treatment.

"Digitalis is indicated only in auricular fibrillation or cardiac failure.

"And, as infection may play a rôle in goiter, the eradication of all known foci is indicated."

Blum<sup>8</sup> believes that iodine preparations may be beneficial in thyroid disease in which the gland still possesses the power of splitting off iodine from alkali iodides.

In an article in *The American Journal of the Medical Sciences* for January, 1927, Hoover<sup>9</sup> ridicules the present operative treatment for thyroid disease, and states: "It is extremely difficult to evaluate a treatment that is supposed only to ameliorate the symptoms of a disease that is self-limited and runs a course varying from six months to three years, and is subject to frequent remissions and exacerbations."

#### SURGERY

Toxic goiters have a definite action upon the heart and may cause a degeneration of the liver and kidneys, the brain and other organs if surgery is postponed too long.

Bartlett,<sup>10</sup> Welti,<sup>11</sup> and many others have emphasized the danger of operating on patients with pronounced toxic symptoms, especially those with cardiac decompensation, great loss of weight, severe gastro-intestinal symptoms and a high met-

abolic rate. Much of this advice we are now forced to disregard, as many of the severe symptoms subside under careful management. The assurance of relief that we can extend leads the patient to accept the operation often with pleasure, which is a great factor in the endurance of the operation and convalescence. In fact, goiter patients themselves are seeking the advice of physicians early as in other diseases. Fewer cases of exophthalmic or toxic goiter will be seen in the future, and perhaps the day will arrive when a plan will be found to positively prevent or cure the disease by some simple method, unless we discover that, as with tonsils, little or none of the thyroid is necessary in the human economy.

The question of operating upon foci of infection or complicating conditions previous to the thyroid operation is a debatable subject. Some advocate the removal of diseased tonsils previous to the thyroidectomy, but if the thyroid is the major complaint and is causing the greater discomfort, this should, no doubt, be attended to first. With a low basal rate, the clinical symptoms of thyroid disease moderately expressed, and with a preponderance of evidence in favor of a surgical disease elsewhere as the chief disturbance, the associated surgical disease should be operated upon first. The judgment of the experienced surgeon will usually settle this question correctly.

The indications for an operation on a large colloid or adenomatous thyroid may be: (1) for cosmetic effects; (2) for relief from pressure; (3) to forestall a beginning hyperthyroidism; (4) to prevent complications in other organs; and (5) to effect a cure before the symptoms become pronounced.

Elliott<sup>12</sup> says that hyperthyroidism is purely a surgical disease, and that a radical operation should be performed, as inadequate surgery often necessitates a second operation.

Richter<sup>13</sup> states that residual symptoms, which have their origin in diseased tissue of the thyroid remaining after an operation, indicate inadequate surgery.

Arnold Schwyzer<sup>14</sup> believes that colloid or exophthalmic disease may be present in the same gland, and it is of little benefit to remove the colloid nodes without removing the toxic or diseased tissue between them.

The judicious use of bromides, codeine, and

morphine for a day or so preceding the operation in a patient who has been taking a sufficient amount of Lugol's solution has its beneficial effect. The patient should be mentally and physically prepared for the operation. The time selected for operation in exophthalmic goiter is at the period of maximum improvement following the administration of Lugol's.

The operative risks are greater in children. Most adult cases can be operated with local anesthesia, and it is to be preferred when the patient is willing and there are no contraindications. A deep anesthesia is not advisable, but local with gas or ether analgesia may be practised. The anesthesia, however, should be wisely chosen, and carefully given.

It is a question how much gland tissue should be removed. Surgeons are becoming more radical of late and are removing more of the gland than formerly. This prevents recurrent symptoms when an excessive amount of the gland is allowed to remain. The gland should not be stripped completely from the trachea, and tracheal collapse should be anticipated.

#### TECHNIC OF OPERATION

Since 1912 the writer<sup>15</sup> has employed a type of operation which is done nearly as quickly as a ligation operation. Most of the cases, even before Lugol's solution was used, recovered completely and required no more surgical work, excepting those with pronounced symptoms where only one lobe was removed at a time.

The collar incision is the one usually employed. It is not always necessary to sever the sterno-hyoid and sterno-thyroid muscles, and rarely the sterno-cleido-mastoid. The muscles are separated perpendicularly in the midline in the average case of small goiter. When it is necessary to sever the muscles, special clamps are placed from without inward through a muscle puncture wound. The handles of the clamps will be in the outer border of the field, thus giving a clearer field for the operation. (See illustration.)

The thyroid vessels are either clamped with flexible forceps or ligated at once and the necessary portion of the thyroid removed, leaving the posterior and part of the lateral capsule and a small portion of the glandular structure attached thereto. A double plain catgut No. 1 ligature is thrown around the superior and inferior vessels, including the remaining capsule and

small portion of thyroid tissue in the vicinity, and a continuous back and forth suture approximates the remaining capsule and, continued, closes the edges. In this way pressure is equally distributed and no undue cutting of sutures through the tissue occurs. I have continued with

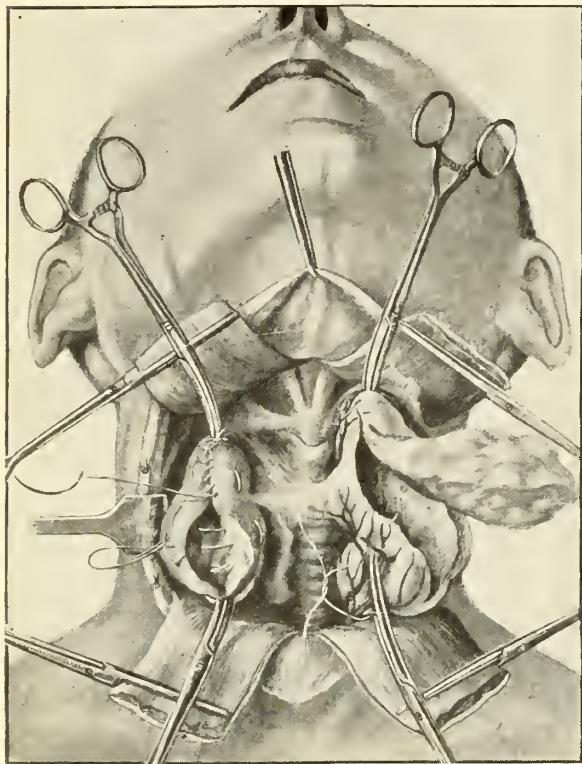


Fig. 1. Illustrating (1) clamps placed from without inward across muscles, exposing thyroid, (2) control of blood supply at poles, and (3) method of suture. Note: Artist has left an excess of thyroid tissue and capsule.

practically the same operation since it was first used except that now the gland is more thoroughly removed.

The muscles are united with plain catgut and the skin with a subcutaneous chromic catgut No. 0 or fine dermal. There has been no unusual oozing or bleeding. Exudate has continued from one to five weeks. The wound heals very well, with a minimum amount of scar. The dressings are of sterile vaseline and gauze.

The use of heavy chromic catgut or nonabsorbable suture material may account for the prolonged drainage reported by some operators. Where the gland is too thoroughly stripped from the trachea or there is injury to the recurrent laryngeal nerve, an irritating cough or tracheitis is apt to follow and last for several months.

#### TREATMENT FOLLOWING THE OPERATION

A. The first three days following an operation upon an exophthalmic goiter is the most critical period. Upon recognizing the dangerous symptoms as they first appear and applying appropriate treatment often depends the success of the undertaking. The plan which we have used for some time is to administer Lugol's solution, bromides, and sometimes glucose solution by the bowel. If sufficient water cannot be given by mouth or bowel, hypodermoclysis is employed. Ice is applied to the head, neck and chest, and the electric fan is used to keep down the temperature. Further sedatives are used if required. Lugol's solution, water, and food are given by mouth as soon as tolerated. It is surprising how the most pronounced symptoms are thus controlled.

B. A tracheitis which follows some operations should be treated by inhalations of steam with tincture of benzoin compound or eucalyptus. Atropin is used to control excessive throat secretion.

C. Many surgeons use iodine over quite a period following an operation for exophthalmic goiter. It is certain that the reaction disappears sooner and a normal state is reached earlier by its use, but I believe it should be discontinued when its beneficial limit has been reached.

The patient should understand that the full benefits of the operation for toxic goiter are not experienced at once. He should take no stimulants or questionable foods. He should avoid worry, excitement and responsibility, take moderate regular exercise with periods of rest, remain in the open air as much as possible, and get the required amount of sleep. Thus the convalescence is progressive and satisfactory, and the cure is more certain.

#### STATISTICS

Broderson<sup>16</sup> reports a cure of 87.4 per cent by radical operation. Some authors have noted a marked decrease in the size of enlarged hearts after operation.

In an outline of 100 consecutive cases analyzed by Richter,<sup>17</sup> seventy-six were primary hyperplastic goiters and twenty-four secondary toxic adenomas. A normal rate was ultimately obtained in ninety-nine out of one hundred patients and they were all relieved of hyperthyroidism.

Elliott<sup>18</sup> reports a freedom from toxic symptoms in 93 per cent of the cases operated upon by Kanavel, Koch and Richter. In seven per cent there was a recurrence to some degree. None operated upon in the early stage had any evidence of permanent secondary pathological changes, but the late cases showed about 50 per cent change.

Jackson<sup>19</sup> reports 92 per cent of cases cured after operation in a series of 120 cases. The average basal metabolism in these cases on admission was plus 46, after taking Lugol's plus 30, and on discharge plus 5. The average loss of weight was 23 pounds, and the gain of weight in from one to twenty-four months after operation was 21 pounds. The average pulse on admission was 120, and on discharge 79.

Fahrni's<sup>20</sup> percentages in 320 thyroidectomies were: exophthalmic 55.93, large colloid nodular 3.75, toxic adenoma 30, cystic 3.75, large adenomata 6.35, and carcinoma 0.31. There were eight recurrences in cases that had been operated upon from one to twelve years previously.

Richter<sup>21</sup> reports some parathyroid damage in 14 per cent of cases operated with the possibility of tetany arising in some of these individuals. This latent possibility he controls by changes in the intestinal flora and special diet.

Helmholz<sup>22</sup> reports thirty-six cases of exophthalmic goiter in children under fourteen years of age at the Mayo Clinic during the years 1921 to 1926, inclusive. The symptoms were present from six to eight years. Three improved so rapidly under Lugol's that operation was unnecessary.

The results of an operation on a carcinoma of the thyroid gland are discouraging. Radium and deep x-ray, or the removal of the trachea if affected, may prolong life.

#### CONCLUSIONS

1. A complete understanding of the thyroid gland has not yet been reached.
2. It is believed that thyroid disease may often be prevented by the use of proper food and water containing the necessary amount of iodine in childhood.
3. Many heart disorders, gastro-intestinal disturbances, and neuro-muscular complaints have been traced to hyperthyroidism.
4. The profession has reversed itself in the

management of surgical thyroid cases in the last five years.

5. It has been recently demonstrated that iodine, best in the form of Lugol's solution, tones down nearly all the severe symptoms of an exophthalmic goiter.

6. The preliminary use of Lugol's has made the ligation operation unnecessary and the surgical work safe with 90 per cent of cures.

7. Nearly all forms of treatment other than surgery have been discarded for the present by the profession in exophthalmic goiter.

8. Surgeons as well as patients no longer fear disastrous results from the operation.

9. All forms of thyroid disease present in adult life may be considered surgical at the present time.

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#### IODINE COMPOUNDS AND THE THYROID

Experiments have been made recently to determine quantitatively the rates at which the hyperplastic thyroid gland of the dog selectively absorbs various iodine compounds. From this study it may be concluded that in practice iodide iodine is of chief pharmacologic significance in altering thyroid secretion. There appears to be little experimental basis for the use of free iodine, even if loosely linked with iodides, as in compound solution of iodine, in the treatment of patients with various types of goiter. (*Jour. A. M. A.*, June 23, 1928, p. 2024.)

#### THE ANTERIOR LOBE OF THE HYPOPHYSIS

In 1921, Evans and Long demonstrated specific endocrine effects, such as gigantism and sex disturbance from parenteral dosage of mammals with beef anterior hypophysis after failure in a long series of massive oral administrations. Putnam, Teel and Benedict have prepared a sterilized extract of the anterior lobe of the hypophysis that has been used in animals with the production of changes which appear to be specific. It serves to repair some and perhaps all of the disabilities produced by hypophysectomy. The extract has been used in one human case of pituitary insufficiency, apparently with temporary benefit. (*Jour. A. M. A.*, June 2, 1928, p. 1791.)

## DIET IN THE TREATMENT OF DYSPEPSIA\*

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IT is my purpose here to relate something of my personal experience and opinions regarding the use of diets in the management of dyspepsia and to state what, in my belief, is the most important function of a department of dietetics. Presumably Hippocrates met with food fad-dists among his patients and possibly among his fellow practitioners, because he wrote as follows: "A slender and restricted diet is always dangerous in chronic diseases and also in acute diseases when it is not requisite. In a restricted diet patients who transgress are thereby more hurt, for every transgression, whatever it may be, is followed by greater consequences than in a diet that is somewhat more generous. Something must be conceded to habit, to season, to country and to age." The idea that most, if not all, illness is due to faulty diet is as old as recorded medicine, and that will-o'-the-wisp of the hopeful imagination, an ideal diet, has been ardently pursued through succeeding centuries.

Within the last two or three decades several factors have contributed to increased curiosity regarding diets: the successful efforts of federal and local health organizations in securing a purer water supply, safer distribution of milk, and cleaner marketing of food products in general, were unfortunately associated with what many believe to have been meddlesome and disquieting inquiries into quite harmless and efficient methods of food preservation, for example, the use of benzoate of soda in canning. Improved transportation by land and sea has introduced a greater variety of foodstuff. The urbanization of the population has created a greater demand for methods of preservation by refrigeration or otherwise. Increasing prosperity permits wider selection. Finally, the last thirty years has witnessed the birth and infant development of the science of nutrition. The scientist has usually been conservative in applying the results of his laboratory investigation, but with so many reasons for public interest in diet it is not remarkable that pharmaceutical firms, publishing houses

and the lay press have gallantly undertaken the education of the physician and his patients. I suspect that sometimes attempts have been made to utilize information before it became available. Yeast, oranges and cod liver oil have, through skilled commercial advertising, captured popular imagination. In the up-to-date household the mystery of the radio is being supplanted by the romance of the vitamine. Both are used in telling bedtime stories. So long as these reasons for interest in diet have led to good advice regarding what should be eaten, I have no criticism, providing an unreasonable economic burden is not placed on the bread-winner. When, however, restrictions are imposed I believe that the authority for such restrictions should be examined carefully. Instinctive selection of food has always afforded reasonable protection to such members of the race as merited survival. The food restrictions imposed during the War happily never amounted to hardship, but they did engender a pleasurable sense of conscious virtue, and the habit of doing without something that isn't liked anyway has persisted. Whether the national tendency toward prohibitive legislation can be attributed to the War is questionable, but it is undoubtedly true that the word "don't" is steadily growing in popular usage over the word "do." It is perhaps fortunate for the health of the nation that the average American citizen is still free, with respect to food at least, to use his own judgment, in deciding the quantity and quality of that which he consumes.

The known criteria of an efficient diet are simple. There must be sufficient calories to supply energy, the protein must be qualitatively as well as quantitatively adequate, the carbohydrate fat ratio must fall within certain limits and inorganic salts and vitamins must be safeguarded. Most citizens living at a satisfactory economic level are amply protected, unless through bad advice they delete something. It has been definitely shown that meat proteins are more efficient than vegetable proteins and that the widespread idea that meat is harmful has no basis. The term nitrogen balance has experimental signifi-

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cance, but no clinical application in the treatment of dyspepsia.

How, then, may diets be faulty? First, there may be calorie excess. I know of no disease other than obesity that can be attributed to calorie excess. The frequently repeated dictum that everyone eats too much may be true, but it still awaits scientific confirmation. Second, there may be a relative excess of one important element, but here it will be found that it is not really the excess that causes disease but the complementary deficiency of other constituents. Keeton<sup>†</sup> observed the development of pellagra in a patient who was being treated for epilepsy by a high-fat, low-carbohydrate ("ketogenic") diet. The pellagrous manifestations promptly disappeared following the administration of meat protein. Pellagra developed in another patient following a series of alcoholic sprees, not because of the alcohol but because of starvation with respect to meat. In actual practice absolute vitamin deficiencies producing beriberi or scurvy are extremely rare, but there is little doubt that relative deficiency gives rise to bodily discomfort, an impaired sense of well-being and lowered resistance to infection. That relative deficiency in diet impairs health is admittedly difficult to prove by any strictly scientific measurement, but the clinical evidence of improvement in health following the removal of restriction is convincing.

The common organic diseases associated with dyspepsia are carcinoma of the stomach, appendicitis, cholecystitis and peptic ulcer. Attempts have been made from time to time to bring dietary excess or deficiency into etiologic relationship with each of these. For one who is keenly interested in such diseases the temptation to elaborate theories of causation may be irresistible, but after carefully separating fact from fancy one is forced to the conclusion that there is scant evidence that too much or too little of good, bad or indifferent food can be blamed. Recent studies indicate that in some instances of cholelithiasis there is a disturbance of cholesterol metabolism, particularly in pregnancy. One must emphasize, however, that the alleged fault is metabolic rather than dietary.

In the palliative medical treatment of carcinoma of the stomach the chemical constituents of the diet are unimportant. Here the physical properties of the diet only are concerned, and

then only to avoid mechanical irritation or obstruction. Temporary restriction in diet may be indicated during acute attacks of appendicitis or cholecystitis, but any attempt to treat persistent dyspepsia arising from either disease is hardly fair, since the patient is thus denied the benefits of skillful surgery. Diet is an important factor in the medical management of peptic ulcer but it has always seemed to me that there has been a tendency to overemphasize the value of special kinds of diets in the treatment of ulcer. Apart from the general principles that a diet must be chemically and mechanically non-irritating, that it will neutralize hydrochloric acid and satisfy the calorie, vitamin and inorganic salt requirements of the body, what difference does it make whether butter or olive oil, string beans or green peas, lamb chops or beef tenderloin are used? I believe that Sippy's great contribution to the medical management of peptic ulcer is found in the scrupulous ritual which he developed in his wards and in the machine-like precision with which he secured daily information in regard to the progress of his patients. Frequent feedings and alkalies had been used before but never with the intensive supervision instituted by this masterful clinician. I confess that I can see no departure in principle in the treatment of ulcer in the diets of those who imitate Sippy while appearing to disagree with him. There is one point in the medical treatment of ulcer which has been most difficult to determine: When should the patient resume a normal diet, that is, a diet such as is used by the remainder of the household? There can be no question of the desirability of fixing such a time definitely. Even though the diet used in ambulatory treatment may be balanced, it is monotonous, but more important is the fact that dietary restriction in itself imposes a psychic disability which may reduce a patient's economic efficiency as greatly and as certainly as did the ulcer for which the restriction was imposed. It is true that most patients will try out a more liberal diet, but they may do this with their psychic inhibition unrelieved and the question must arise of how long there is justification of keeping a patient in a state of apprehension. The same question arises in the after-care following surgical measures applied for the relief of the ulcer type of dyspepsia. Recently a writer advocated keeping a patient on a strict medical regimen for three years.

<sup>†</sup>Personal communication to the author.

I know from experience that such restriction is not necessary and I doubt the wisdom of such an imposition, and question the right of physicians to alarm when reassurance is not only warranted but clearly indicated. Personally, I would prefer to have a patient return to a normal diet three months after gastro-enterostomy or after symptoms disappear on any kind of medical treatment. Certainly six months of restriction is preferable to three years.

It is in the dietary management of the so-called functional dyspepsias, however, that abuses and absurdities most often creep in. In this group are cases of constipation, flatulence, migraine, aërophagia, mucous colitis, generalized abdominal discomfort and, above all, fear of serious organic disease. None of the organic diseases produces more persistent discomfort, and no dyspepsia is more worthy of skillful treatment or imposes greater demands on the experience, patience, tact and sympathy of the physician. The predominant feature in all such patients is fear, and it is necessary to overcome this fear and to restore confidence. To do this it is necessary to supplement a painstaking history by a thorough general and roentgenologic examination. Organic disease of the digestive tract must be ruled out with reasonable certainty, and, if possible, any complex which may have played havoc with the mental hygiene must be disclosed. I do not mean to advocate psychoanalysis other than to make use of the everyday knowledge of human nature and human behavior which the discerning physician possesses. A childless marriage, a cheerless spinsterhood, business failure, sleeplessness, family illness, or any one of a thousand environmental disharmonies may result in disordered function of the digestive tract. Fatigue of skeletal muscles has its counterpart in fatigue of the digestive motor apparatus. Anxiety exceeds gastric ulcer as a cause of dyspepsia. Many patients are promptly relieved when an adequate cause for their anxiety is revealed. Another factor in treatment is to restore the patient's confidence in his ability to eat the same food that others eat. He is accordingly placed on a diet which makes no claim to eccentricity. It need not be smooth or rough, or contain an excess of vegetables, bulk, fat, buttermilk or bran. The diet must be one which is easily available in his home, which will not impose an economic burden, and which will contain the ele-

ments of a balanced diet. Often these patients have been submitted to the most amazing restrictions. This is largely because each succeeding physician consulted has deleted a few foods. One such patient, a sufferer from migraine, has been reduced to rice boiled in water and eaten without milk or sugar. His attacks became infrequent when the character of his malady was explained and he resumed a full diet. A little philosophy and reassurance enabled him to return to full activity.

While dietary restrictions may result in relative vitamin or other deficiency, I am convinced that the deleterious effect of restriction on the patient's morale is of equal or greater consequence. It is quite impossible to place any patient on qualitative restrictions without inducing disability, at first mental, although it will promptly reveal itself in physical retardation and impaired initiative. It may be objected that some patients report benefit on eccentric diets and this is very true. I have known certain persons to stick to acidophilus milk, or bran, or a smooth diet, or even goat's milk with almost religious fervor. They were using them in the same way as the hysterically palsied use crutches and canes as an excuse for inadequacy.

In the reëducation of the victim of functional dyspepsia it is a great advantage to have him under observation for three or four days or until his confidence is restored. During this time the trained dietitian is most useful. The problem may be compared to teaching a prospective driver to manage a motor car. While agencies supply purchasers with pamphlets explaining the details of operating automobiles, disaster may sometimes be avoided and assurance more quickly acquired if a tactful and discreet supervisor lends moral support. The chief merit of this plan of treatment in functional dyspepsia is that it works. Suggestion may be used or it may be necessary to use blunting drugs temporarily to control sleeplessness and to treat the habit of anxiety, but the essence of management is the restoration of confidence. A diet should never be used as a narcotic.

I have attempted to indicate that the management of dyspepsia depends on accurate and comprehensive diagnosis, that diet has a limited application in treatment, and that unwarranted restrictions in diet or the use of eccentric diets may be harmful.

## THE CONDITION OF LOWERED METABOLISM\*

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THE ideas herein discussed are derived from a consideration of 785 individuals with basal metabolic rates of  $-10$  and lower, occurring in 2,500 consecutive determinations on all types of patients. All of the determinations were made on ambulatory patients, from March, 1921, to the present date. During the first two years the rates were determined with a Tissot gasometer and analysis of the expired air in a Haldane apparatus, and for the past three years a Roth-Benedict apparatus has been used. One technician did practically all of the former tests, and another has done all of those with the present apparatus.

The factors which affect the basal metabolic rate of an individual are:

*Physical:* Exertion, which raises the rate.

*Mental:* Fear or excitement, which raises the rate.

*Food:* Food intake raises the rate. Fat, carbohydrate, protein each have varying degrees of specific dynamic activity.

*Temperature:* An elevation of the subject's temperature by one degree will raise the metabolic rate ten per cent. The effect of external temperature, although variable, is also a factor.

*Growth:* In children, the rate is relatively higher per unit of surface area than in adults, due to the metabolic requirements of growth.

*Pregnancy:* Does not actually affect the rate of the mother herself, the rise seen in pregnant women just before delivery being due to the growth of the fetus.

*Menstruation:* Does not affect the rate except when accompanied by pain or discomfort.

*Common Drugs:* Do not affect the rate except caffeine in large, almost toxic quantities, and morphine if sleep is induced thereby.

*Glandular Preparations:* (Except thyroid) adrenalin and insulin only.

Leukemia is constantly accompanied by a high rate, and pernicious anemia inconstantly.

Any other disease affects the rate only secondarily (such as dyspnea in asthma and cardiac

cases, edema in renal cases, cachexia in malignant cases, or fever in any febrile condition), but in these instances, obviously, basal standard conditions do not exist.

It would seem to be apparent, then, that any deviation from the normal (the above conditions excepted), when a standard basal state exists, must be due to thyroid influence. In other words, a high metabolic rate indicates hyperfunction of the thyroid gland, and a rate lower than normal means diminished activity of that gland. In spite of this fact, however, clinicians in general seem reluctant to attach a diagnosis of hypothyroidism to a patient with a low rate. Furthermore, the clinical indications of the presence of a low rate are many times overlooked. Cases of frank myxedema are, of course, readily diagnosed, even without the basal metabolic rate, but there are many individuals whose symptoms should suggest a sluggish metabolism, and to whom the administration of thyroid preparations would be of striking benefit. It is with these ideas in mind that the following analysis of the cases of low metabolic rate was undertaken.

The cases which were diagnosed myxedema, because of outstanding clinical evidence, were eliminated outright. They constituted 20 per cent of the total number. This number was not analyzed further, inasmuch as the diagnosis of myxedema can now be made without difficulty; it need only be said that the rate did not always exactly conform with the clinical manifestations of the disease.

Fifteen per cent of the low metabolic rates found were associated with other conditions, largely neurological, such as (1) anxiety neurosis; (2) encephalitis; (3) chorea; (4) manic depressive insanity; and finally (5) with a few general conditions, such as Addison's disease, hypertension (arteriosclerotic) and Glenard's complex.

Sixty-five per cent of the cases were hypothyroid divided among classes as follows: (1) hypothyroidism (early or mild myxedema); (2) goiter (including the colloid type in young indi-

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viduals and the non-toxic degenerating adenomata in older people); (3) endogenous obesity; (4) glandular deficiencies, such as sterility, menopause, cretinism, pituitary tumor, pituitary deficiency and amenorrhea. This last class had low rates from secondary involvement of the thyroid.

In order, then, to arrive at some idea of the outstanding symptoms of the subjects with these low rates, the records of this 65 per cent (510 cases) were carefully analyzed. The symptom complex which finally presented itself was as follows, in the order of frequency of complaints:

1. Fatigue, weakness or drowsiness (the most common complaint).
2. Goiter (28 per cent actually had a goiter).
3. Generalized pains and joint pains (often suggesting a focal case, or a neuritis, like diabetes or tabes).
4. Constipation (usually not reacting to the present fad for bulky diets).
5. Stomach trouble of indefinite nature, probably often meaning constipation (a certain number had an achylia).
6. Overweight (not, as you see, the outstanding complaint; some in fact were actually underweight).
7. Nervousness (usually a depressive, anxious, apprehensive state).
8. Menstrual difficulties (most commonly amenorrhea or scanty menses, skipped menses, sterility and frequent miscarriages).

There were various other complaints of an indefinite, functional, or neurotic nature, such as "heart trouble," headache, dizzy spells, choking spells, and some of a more definite and significant import, such as melancholia, insomnia and skin eruptions.

Several interesting observations were made, as, for instance, the occurrence of gonadal abnormalities, on the basis of a study of a series of 137 females of low basal metabolic rate, not including myxedema, which had sufficient data to warrant a study of sexual function. These cases were divided as follows: married 78; single 72. Actual sterility was present in 45 per cent of the 78 married females. In addition, there were 15 cases of relative sterility, or cases presenting abnormalities: (1) no living children, but one or more stillbirths, miscarriages, or abortions (6 cases); (2) one or more living children, but also one or more stillbirths, abortions, or miscarriages (9 cases). Sterility, then, occurred in 56 per

cent of this series of cases. Sterility occurs, I believe, in about 13 per cent of the white women of the United States.<sup>12</sup> Forty-four per cent of the total number had menstrual difficulties, such as amenorrhea, irregularity, menorrhagia, metrorrhagia, scanty flow. There was no pelvic disease in any of these cases to explain the symptoms. The actual physical signs were not typical of a low rate—the classical signs of frank myxedema were usually lacking.

There was only one case in the total series in which the question was raised of the so-called "myxedema heart" and in only two others (one of which was noted as having a non-toxic adenoma) was any mention made of myocardial damage, not including cases of old age, arteriosclerosis, hypertension, etc., in which myocarditis might be present.

The findings of anemia and low blood pressure, excluding the actual myxedema cases, were extremely variable. The tendency was toward a moderate degree of anemia and low blood pressure, but there were enough cases of high blood pressure and of normal or high blood count to make averages misleading. The body weight of the total series was about average—some were distinctly overweight, and others were definitely underweight. The pulse rates ran uniformly from normal to slow; that is, from 80 down to 50. The temperatures at the time of the test were usually subnormal.

As to the actual figures of the metabolic readings, they varied from  $-10$  to  $-38$ , most of the rates falling between  $-15$  and  $-20$ . From a consideration of certain other cases falling above the lower limit of  $-10$ , namely those from  $-5$  to  $-10$ , and taking into account the fact that there are more factors raising the rate than lowering it, I am almost inclined to recommend that for ambulatory tests the limits might be set from  $+15$  to  $-5$  instead of  $\pm 10$ . However, that is a separate problem. The diagnosis of hypothyroidism would seem to rest, then, upon the symptoms as given, plus a lowered basal metabolic rate.

#### DISCUSSION

Boothby and Sandiford<sup>1</sup> found in one series of 1,642 cases of other than thyroid dysfunction, that 74 per cent were  $\pm 10$  and 89 per cent were  $\pm 15$ , and in a subsequent series of 2,417 similar cases, 77 per cent were  $\pm 10$  and 90 per cent were

±15. In other words, a normal rate is the rule in any case which has no thyroid dysfunction and should lead to the opinion that a low rate means hypofunction just as much as a high rate means hyperfunction. The majority of low rates in these series was most apparent in cases of very probable undernourishment (diagnosis given as dysphagia, malignancy and epilepsy) and a few were evident in other glandular dystrophies, such as hypopituitarism and Addison's disease. Means<sup>2</sup> has stated that "if such conditions as starvation, hypopituitarism, hyposuprarenalism are excluded, a low basal metabolic rate is strong presumptive evidence of hypothyroidism."

J. T. King<sup>3</sup> has reported a series of 36 cases of low basal metabolic rate with a distribution of diagnosis very similar to the series herewith reported. He found that, next to myxedema, the low rates were most commonly found in colloid goiter cases, but points out the importance of rates between -15 and -20, the symptoms already mentioned often appearing in these cases.

Ohler and Ullian,<sup>4</sup> in a study of 1,000 cases in which basal metabolic studies were done, mentioned the fact that most simple colloid goiters had low rates, and in 88 so-called borderline hypothyroid cases, found that the symptoms of weakness, dry skin, susceptibility to cold and slow mentality were practically constant.

In our series, 28 per cent of the total number had colloid or colloid-adenomatous goiters.

Barach and Draper<sup>5</sup> conclude, from an analysis of 500 determinations, that hypothyroidism in the absence of clinical myxedema warrants further consideration. They found that fatigue was the constant symptom in these patients, together with sensitivity to cold, skin and hair dryness, drowsiness and mental changes. Sturgis<sup>6</sup> presents essentially the same conclusions, based on 15 cases, as does Dowden<sup>7</sup> on 37 cases.

It is therefore evident, from a consideration of the factors which are known to affect the basal metabolic rate, that the thyroid must be given first consideration. From a study of patients upon whom basal metabolic rate determinations have resulted in low readings, it is also apparent that hypofunction of the thyroid gland is in the majority of cases responsible for such an abnormally depressed rate. Apart from those cases presenting outstanding characteristic symptoms of myxedema, all cases having any of the follow-

ing signs or symptoms, not explicable upon any other ground, should have a basal metabolic rate determination made: fatigue; weakness; drowsiness; mental inertia; generalized, shifting bodily pains; constipation; overweight; dry skin, and dry and falling hair; sensitivity to cold; sterility; goiter; and, in the female, amenorrhea or scanty menstruation; and, finally, any patients with stigmata of glandular deficiencies or obesity.

If a low basal rate is obtained in any cases so investigated, a diagnosis of hypothyroidism is justified, and the administration of thyroid substance is warranted as part, at least, of the therapeutic regime.

It is difficult to speak about any glandular product without running the risk of being misunderstood. However, it is generally conceded that the administration of thyroid substance does give results, whatever may be said of other glandular products. It is also the opinion of most investigators that the glands of internal secretion are interrelated as to function (Marine<sup>8</sup>). Therefore, in any case which shows definite signs of deficient function of glandular mechanism, not explicable by any demonstrable local pathology, in which a low basal metabolic rate is found, the administration of thyroid substance may be considered beneficial. This has actually been our experience in the series studied, quite striking at times in those cases of amenorrhea, scanty and irregular menses and sterility. In obesity, likewise, although in the majority of cases it is found to be of the exogenous type (Means<sup>9</sup>), there are cases which show low basal metabolic rates, and these endogenous types can be helped in their efforts toward weight reduction by the administration of thyroid substance (Means<sup>10</sup>; McKinlay<sup>11</sup>). Certain disturbances of the menopause can be relieved by thyroid, if a low basal metabolic rate indicates its use. The same can be said of a few cases of acne, dry eczema and ichthyosis.

In conclusion, then, I wish to repeat for the sake of emphasis that the cases which have presented the symptoms mentioned as most commonly found accompanying a low basal metabolic rate can with justification be diagnosed as hypothyroidism, and treated accordingly. It was with the hope of stimulating interest in the subject of diminished metabolism in certain types of pa-

tients that the above analysis was made and the results reported.

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# GIANT-CELL TUMOR OF THE UPPER END OF THE FEMUR: REPORT OF THREE CASES\*

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OUT of the haze that for years has surrounded sarcoma of bone a clear-cut entity, the giant-cell tumor, generally accorded benign, has gradually emerged. Pathologists are agreed that the giant cell typical of this tumor has definite characteristics that set it apart from the giant cells of rapidly growing malignant tumors and the so-called foreign body giant cell in tuberculous lesions, gummas and surrounding foreign material. In the giant-cell of the tumor the nuclei stand out distinctly and their size and distribution within the cell are uniform. The reported cases in which metastasis and death have resulted from a giant-cell tumor have probably been wrongly diagnosed, because of failure to differentiate the type of cell. In these borderline cases only the pathologist skilled in the microscopic study of bone tumors can distinguish the type; the clinician must therefore seek his aid.

A definite diagnosis of giant-cell tumor should not be made in any atypical case without exploration and examination of the tissue by a pathologist competent to recognize the cells. Whereas in years gone by many radical operations were performed needlessly, there is danger that, with the increasing dissemination of the knowledge that these tumors are benign, patients will be treated conservatively who should be treated radically. The present-day interpretation of the term giant-cell tumor includes tumors that were formerly listed under the terms giant-cell sarcoma, giant-cell sarcoma of the epulis type, hemorrhagic osteomyelitis, and myeloma, the last a British term which is still being used. The confusion that exists is well shown in the statement by Kolodny, who says that there have been hundreds of cases of giant-cell tumor reported as sarcoma to the Registry of Bone Sarcoma by clinicians and pathologists from all sections of the country.

There are two divergent views regarding the origin of these tumors, one that they are blasto-

matous, and the other that they are inflammatory. For the safety of the patient, it would probably be better to continue to consider them as of blastomatous origin until further proof of their inflammatory nature is brought forth. Trauma has been stressed as an etiologic factor. Coley recorded that in 56 per cent of his cases there was a history of trauma. Meyerding found that in 54 per cent of the series in the Mayo Clinic there was a history of trauma. He believes that it is difficult to accept trauma alone as a cause, granting, however, that trauma may form the necessary stimulus for the development of such a tumor in a given area. He called attention to the fact that in the jaw, where foci of infection so commonly exist, and where trauma during mastication is so likely to occur, benign giant-cell tumors of the epulis type are common. During the period in which he observed the series in the Mayo Clinic, twenty-four giant-cell tumors of the long bones, and sixty-five giant-cell tumors of the epulis type in the jaw were operated on. Meyerding believes that there is a close relationship between osteitis fibrosa cystica and giant-cell tumor. Trauma is an etiologic factor which must be taken into account. The appearance of the material within the tumors suggests that hemorrhage, and later vascularized tissue, with maintained pressure within the bone similar to that of an aneurysm, is a factor in the destruction of bone. The fact that the tumors are so often found in the spongiosa further suggests intramedullary hemorrhage as the primary cause.

Kolodny reported from the Registry of Bone Sarcoma that the incidence of this type of tumor as compared to sarcoma was one to two, but that this was probably too high an estimate. In my experience the incidence has certainly been less. The tumors are rare in children and in the aged, and are equally divided as to sex. They are slow of growth and rarely cause much discomfort, and thus may reach great size. Occasionally, fracture is the symptom that impels the patient to seek advice. The tumors occur

\*From the section on Orthopedic Surgery, Mayo Clinic. Read before the Minnesota Academy of Medicine, St. Paul, Minnesota, April 11, 1928.

usually in the long bones; they are most common in the lower extremities, and ordinarily are found in the lower end of the femur. In the cases reported by Meyerding, the lower end of the femur was involved in eight, the proximal end of the tibia in seven, the proximal end of the femur in one, the lower end of the radius in two, the distal end of the ulna in one, the proximal end of the humerus in three, the middle third of the humerus in one and the eighth rib in one.

The tumor may be easily seen and palpated and may destroy the condyle entirely if it is in the lower end of the femur, or if it is in the head of the tibia it may cause such great destruction that the only recourse is amputation. The tumor may rarely be cortical or subperiosteal. The engorged veins of the skin may be present, although they are not usually as large as those seen in sarcoma. Usually a giant-cell tumor starts from within the bone, is expansile rather than infiltrative, destroys bone steadily, and rarely perforates or involves the surrounding structures. Roentgenologic study is essential to determine these factors and must be carefully carried out. The mass, as stated, is almost always at the end of the bone. The shaft does not continue into the tumor as it does in sarcoma, but at the juncture of the tumor and the shaft there is a well developed shoulder. The leaf-like layers seen at the ends of the tumor in osteogenic sarcoma are not present. Irregular bony trabeculations will be seen in the wall of the tumor, due to shelf-like projections from the periphery toward the center. They serve as the framework, and the open areas between them are merely the periosteum and the periosseous structures, the tumor being retained within the capsule. The tumor may completely erode the spongiosa of the epiphysis and creep along the ligaments, and in the advanced cases all semblance in the film of the normal structure of the end of the bone may be lost. The tumor, however, remains sharply circumscribed, and held in by a thin shell of bone and fibrous tissue, the mass presenting in the roentgenogram a multicystic appearance due to the irregular ramifications of the bony trabeculae. It is in these advanced late cases that the differentiation of osteogenic sarcoma is difficult, but it must be remembered that an

osteogenic sarcoma of such size rarely remains encapsulated. Meyerding has pointed out that it is the ability to expand in all directions, finally perhaps dissecting along fascial or ligamentous planes but not actually invading those

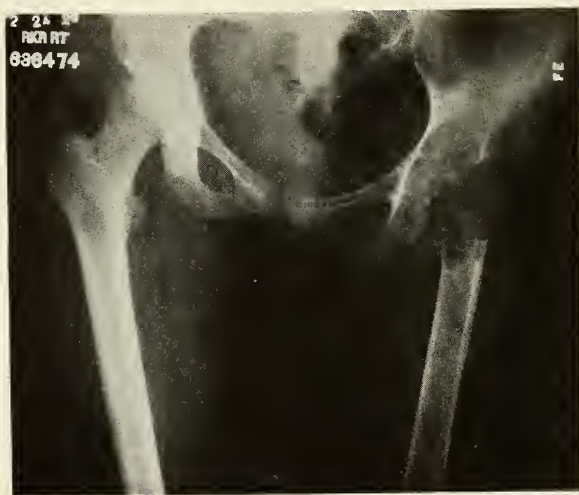


Fig. 1. Case 1. Giant-cell tumor in upper end of the femur; symptoms had been present for seven months.

structures, that gives this tumor roentgen-ray characteristics unlike those of any other benign tumor.

At operation, the appearance of the tumor varies greatly, according to whether or not a tourniquet is used. If a tourniquet is not used in the vascular type, brisk hemorrhage will occur when the tumor is opened. The typical tumor contains a soft, vascular, frequently profusely bleeding material which may be readily scooped out. The older the tumor, the greater the cicatrization at the outer layers, and hence less tendency to hemorrhage. In these more mature tumors, the center may be cystic and contain fluid. When the finger is introduced, the trabeculations on the periphery can be felt; they rarely extend to the opposite side of the tumor. In the terminal stages there may be only fluid and a definite sac lining the interior of the tumor.

The three cases that I am presenting for discussion are interesting, first, because the site in the upper end of the femur is unusual, and, second, because each case represents a different phase in the development of these tumors. In this situation, no matter how great the destruc-

tion, amputation should not be considered, whereas when large tumors in the region of the knee joint have destroyed the weight-bearing area of the bone, amputation is usually indicated.

#### REPORT OF CASES

*Case 1.*—A girl aged eighteen was examined at the Mayo Clinic February 27, 1928. For seven months



Fig. 2. Case 1. Side walls of tumor crushed in.

she had had trouble with the left leg. She first noticed lack of normal movement, followed about one month later by pain in the left hip, and it was then that she began to limp. At first the pain was present only when she walked and was relieved by rest. Gradually it became worse, was present even at night, and extended below the knee. Roentgenograms were taken at the patient's home; a diagnosis was made of tuberculosis of the hip, and a cast was applied. This seemed only to increase the pain, and was removed two weeks before admission. The physician in charge stated that he was undecided as to the diagnosis, and the patient determined to seek further advice.

*Examination.*—General examination disclosed a rather anemic girl 5 feet 6 inches tall, weighing 111 pounds, 14 pounds below normal. Blood pressure and urine were normal and the Wassermann reaction was negative. The hemoglobin was 48 per cent, erythrocytes numbered 4,260,000, and the leukocytes, 3,700; the color index was 0.5; a differential count showed lymphocytes 34 per cent; there was slight anisocytosis and poikilocytosis. Foci of infection were not demonstrable. Movements of the left hip were good, except for

restriction of flexion and abduction at the extremes. Shortening was not demonstrable. Roentgenograms of the chest were negative. Roentgenograms of the pelvis and both hips showed a tumor involving the intertrochanteric area and extending a short distance into the shaft at the level of the lesser trochanter, the latter being involved in the tumor (Fig. 1). The bone had not increased in size appreciably, except that the lesser trochanter was enlarged.

*Operation.*—A longitudinal incision was made over

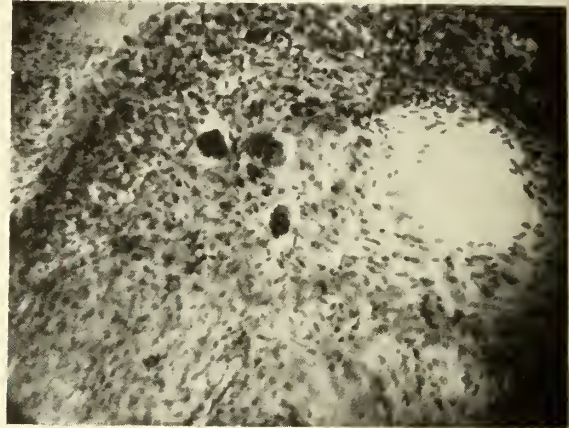


Fig. 3. Case 1. Giant-cell tumor.

the greater trochanter, and the bone was exposed and opened. The tumor was found to be from 10 to 12 cm. long, extending well up into the greater trochanter and shaft, and also into the lesser trochanter. The cavity was lined with a thin membrane, and filled with a red vascular material which resembled cranberry jelly. This material was easily curetted and the lining was removed as completely as possible. With a pair of strong rongeur forceps, the side walls of the structure were broken down and bent inward, in the hope of inducing osteogenesis and thus obliterating the cavity (Fig. 2). Some of the tissue was submitted to the pathologist at the time of operation, and reported to be typical giant-cell tumor (Fig. 3). The wound was closed without drainage and a plaster-of-Paris spica cast applied.

*Comment.*—The history of mild onset was typical, the complaint gradually increasing in severity until relief was sought. The destruction by the tumor was so great that there was danger of pathologic fracture unless support could be maintained. Operation was performed too recently to permit conclusions with regard to the functional result. The precaution was taken of having roentgenograms of the entire pelvis and of the chest made before the operation was performed to rule out the possibility of metastasis. Roentgen-ray treatment is to be given when the cast is removed.

*Case 2.*—A married woman aged thirty-nine was examined at the clinic July 9, 1923. Eight years previously while pregnant, she had fallen on the sidewalk and injured her left hip. Following delivery, she improved and had no more difficulty; a few years later, when she was again pregnant, the pain in the left hip returned. Two or three months before she was examined at the clinic, she again became pregnant, miscarried at two months. She had had some pain since, and complained of a feeling of insecurity in the hip.



Fig. 4. Case 2. Large cystic giant-cell tumor involving trochanter and neck of the femur.

*Examination.*—The patient was somewhat obese, 5 feet and 6 inches tall and weighed 180 pounds. Enlargement in the region of the hip could be distinctly felt. There was some restriction of motion in the hip. She walked with a distinct limp. General examination was negative, except for a slight increase in blood pressure. The urine and blood were normal and the Wassermann reaction was negative. Four teeth showed evidence of periapical infection. The tonsils were small and fibrous, and had never given any trouble. A rather large congenital hemangioma of the right side of the face was of interest from the standpoint of the etiology of giant-cell tumor. A roentgenogram of the chest was negative, but a roentgenogram of the pelvis and both hips (Fig. 4) showed an extensive tumor in the upper end of the left femur, extending well up into the neck of the bone to the head, involving the whole trochanteric area and down a short distance into the shaft below the level of the lesser trochanter. A few long trabeculations were made out, but the tumor was well marked off by its osteoporotic character, the bone reached by the tumor being greatly thinned. A diagnosis of giant-cell tumor was made and exploration advised.

*Operation.*—At operation July 12, the lesion was found to be a smooth lined cyst, extending into and involving the neck of the trochanter and part of the shaft, as shown by the roentgenogram. It was filled with straw-colored fluid. There was very little trabec-

ulation at the periphery. The lining was removed as thoroughly as possible, and several pieces which were sent to the laboratory were reported as due to a hemorrhagic bone cyst. The cavity was packed with several pieces of bone taken from the tibia as a graft. Since there appeared to be sufficient strength in the neck, I did not put the leg in a cast, much to my chagrin later. I insisted only that there should be no weight-bearing and that crutches should be used. One month later, while the patient was leaving the hospital



Fig. 5. Case 2. Same case as that shown in Figure 4, four and a half years later; disappearance of cyst from trochanter; head shows signs of involvement.

and about to step into a taxi, sudden severe pain occurred in the hip, and at the same time she felt something snap. Roentgenograms were taken at once, and disclosed fracture of the neck. The fracture was reduced by the Whitman method, and the leg put up in abduction. Fixation was maintained in a cast for ten months. While the patient was convalescent, the infected teeth were removed. A recent report from her physician states that she now does everything: walks, dances, scrubs the floor, and so forth, and to all intents and purposes there is union (Fig. 5). The roentgen ray showed that the cyst had disappeared but the head looked as if it were involved. There has been a great deal of absorption of the bone grafts, but I believe they served their purpose well.

*Comment.*—This, I believe, is an example of a giant-cell tumor in the late stage, in which all the soft tissue of the tumor had been destroyed and replaced by cystic clear fluid, enclosed by a smooth lining. The use of bone grafts and sustaining the fractured bone resulted in satisfactory union which I believe is bony. Of passing interest is the congenital hemangioma on the right side of the face. The patient had had trouble for at least eight years previous to coming to the clinic.

*Case 3.*—A woman aged twenty-four came to the clinic February 24, 1928. In the spring of 1921, she began to limp, favoring the left leg, but there was no definite pain. Later in the year she fell and was unable to get up. For ten days she was very uncomfortable but gradually recovered; the limp, however, was more marked. She consulted another physician and a roentgenogram was made, from which bone

suspicious-appearing area in the roof of the acetabulum.

*Comment.*—In this case the local recurrence occurred five years after operation. There was no evidence of metastasis. The hemoglobin was rather low and the patient appeared to be a little below par.



Fig. 6. Case 3. Giant-cell tumor involving upper part of shaft, greater trochanter, neck and head of femur.

cyst was diagnosed. Radium was applied on two occasions. A spica cast was worn for about a year, but the tumor (Fig. 6) increased in size and finally (at her home in 1923) the head and neck of the femur were removed. The surgeon sent some of the tissue to the Mayo Clinic for diagnosis, and Broders reported it to be giant-cell tumor. The wound healed by first intention, and the patient soon got about very nicely with a cane. About a month prior to examination at the clinic, the left thigh had swelled slightly and there was slight discharge of bloody material from the old incision.

*Examination.*—The patient walked with the aid of a crutch. The hip was hypermobile because of the resection of the head and neck. The left leg was 10 cm. shorter than the right. The hemoglobin was 55 per cent, and there was a trace of albumin in the urine. She had had tonsillitis. Roentgenograms of the teeth were negative, as were those of the chest. A roentgenogram (Fig. 7) of the upper end of the femur showed recurrence of the tumor. The patient was referred back to her former surgeon. I agreed with him that the recurrent growth should be excised and followed by roentgen-ray treatments. There was also a



Fig. 7. Case 3. Recurrence of giant-cell tumor five years after resection. Suspicious-appearing area also in roof of acetabulum.

#### SUMMARY

These three cases of giant-cell tumor in the upper end of the femur were somewhat unusual. In the first case symptoms had been present for only seven months and the tumor was excised during the active period of the growth, when the vascular mass within the cavity could be scooped out, the lining destroyed by curettage and the side walls crushed in. Roentgen-ray treatment will be carried out when the cast is removed six weeks from the time of operation.

The second case showed the terminal cystic stage of the disease. Bony union has ensued after a stormy convalescence complicated by fracture.

The third case showed the tendency to recurrence. It is probable that enough of the upper end of the bone was not removed to include the limiting membrane that is present in these tumors, and which walls off the tumor from the rest of the medullary cavity.

The two patients who had active trouble were below par, with low hemoglobin, whereas the patient in the terminal stage was in robust health.

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## OF WHAT DIAGNOSTIC VALUE IS A SINGLE GASTRIC ANALYSIS?\*

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*Mankato, Minnesota*

**G**ASTRIC analysis implies the chemical, macroscopic and microscopic study of the gastric contents. Its value and bearing on diagnosis is debatable. Recent literature yields constant repetitions of the fact that gastric analyses should be re-checked before they have any worth. Doctor Cheney<sup>1</sup> of Stanford University asserts that a single extraction of stomach contents is insufficient in the establishment of achlorhydria. Similar opinion must govern the conditions of hypo- and hyperchlorhydria as well; yet older textbooks stress the fact that certain conditions of gastric secretory power are constant in definite disease of the stomach.

With such facts coming from medical research centers, it is surprising that men in active practice in gastro-intestinal disease persist in carrying out the procedure in order to complete their records on any case requiring study. It is estimated that less than 10 per cent of all cases so studied in private practice are re-checked. If this is true, are we to assume that 90 per cent of the gastric analyses performed in private practice have no practical value?

The study of gastric contents can be divided into two steps, namely, macroscopic and microscopic study, and chemical examination. The presence of certain macroscopic and microscopic findings is of great aid in diagnosis; their absence, however, has no significance. Chemical examination, at least, occupies the interest of many observers. This is illustrated by a rapid survey of the 1926 Quarterly Cumulative Index. It reveals 79 publications with direct bearing upon gastric secretory power. No reference could be found where macroscopic and microscopic findings had been listed and studied.

Perusal of several publications revealed that the authors had made no re-check even on series of cases offered as experimental data on some phase of gastric analysis. In view of the fact that clinicians are declaring a single gastric analysis to be of no value, one begins to wonder if he

is not inflicting an unpleasant and valueless procedure upon his patient.

The value of gastric analysis in diagnosis is undoubtedly a variable factor, depending upon the group of workers. One group may depend almost entirely upon clinical study; another upon the x-ray work performed; still another may place extra emphasis upon the laboratory work. It is certain that the first two steps are indispensable, and, in most cases, final, in establishing a diagnosis. Realizing this, it was determined to find of what value the chemical study of gastric contents was to our clinical group.

One hundred and fifty cases were selected upon which a single gastric analysis, by the fractional method, had been performed. Each step in every analysis having been performed by the same individual, we can assume that technical variations are at a minimum.

This group of patients was first studied clinically, and found to possess definite indications for gastro-intestinal study. On none of these was the study made as a routine in general examination. The indications for analysis were variable and their enumeration of no special interest here. Suffice it to say that age, combined with a history of chronic dyspepsia, was indication sufficient to account for many of our cases. This in view of the fact that 25-30 per cent (Bell<sup>2</sup>) of all carcinomas occur in the stomach.

The procedure consisted of extraction of the fasting stomach contents by means of the Reh-fuss tube; then the giving of eight ounces of beef tea, and the withdrawal of material from the stomach at the half and the one hour period. Ordinarily no further extractions were made, except in certain cases of achlorhydria, which condition was determined by a simple method that will be described later. The chemical work was performed on the filtered gastric contents, and the quantitative determinations of free hydrochloric acid content recorded in terms of tenth normal sodium hydroxide. Other chemical work was also performed, but its results have no bearing at this time.

\*Read before the annual meeting of the Southern Minnesota Medical Association, Austin, Minn., October 1, 1927.

Before the cases could be listed as having variations in gastric secretory power, it was necessary to establish a normal. Diligent search in the literature showed great variations in opinion as to what the normal gastric secretory curve should be. It is a general opinion, however, that the limits of normal are broad.

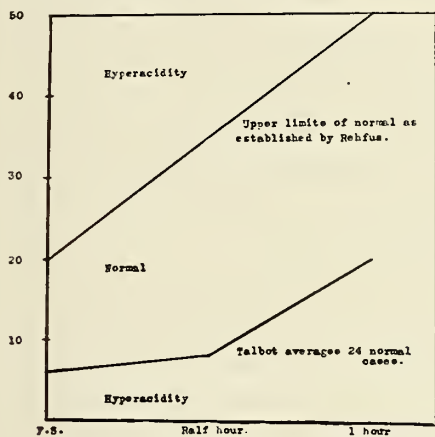


Chart 1.

In Chart 1, the lower curve represents the normal, as established by Talbot,<sup>3</sup> his work being done on twenty-four normal healthy males. The upper curve represents the upper limits of normal, as established by Rehfuß,<sup>4</sup> who has experimental proof to show and prove these high figures. Further, a wide limit of normal is necessary, because of the different type test meal used by different men. We are willing to accept the upper limits of normal as here shown, because of the type of test meal used. Beef tea, according to Ivy,<sup>5</sup> is the only type of food that actually stimulates the gastric mucosa by contact.

Sager and Hartman,<sup>6</sup> in their work on hyperchlorhydria, have used 40 as the upper limits of normal.

One hundred and fifty cases were studied, seventy-seven occurring in males and seventy-three in females (Chart 2). The age incidence of such a group is of interest. We see that the females with indications for gastric study occur with equal frequency in the third and fourth decades; that the incidence of males examined is considerably higher in the fourth decade than in any other.

Grouping these cases according to the state of gastric secretory power which they represent, 14.8 per cent of the total showed hyperacidity, 31.3

per cent normal acid, 32.6 per cent hypoacidity and 21.3 per cent an acidity (Chart 3).

For the purposes of more detailed study and treatment, we have grouped these cases into three large groups, namely, organic disease, reflex gastric conditions, and functional disturbances. A check-up on the final diagnosis of these cases re-

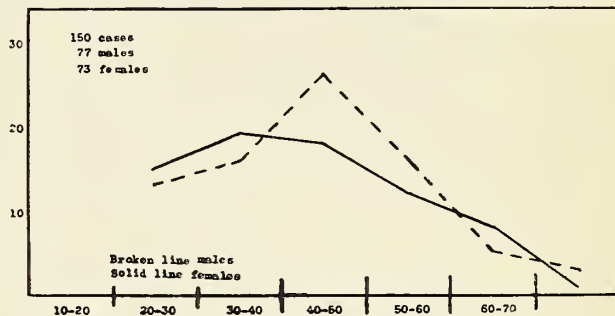


Chart 2.

vealed 20 per cent belonging to the group of organic disease, 46.6 per cent reflex gastric conditions, and 30.6 per cent functional disturbances. There were four cases of pernicious anemia. If

		P.A.	Organic	Reflex	Funct.
Achylia	32	9.4%	15.6%	50%	25%
Hypoacidity	49	2 %	12.2%	51%	34.8%
Normal	47	0 %	19.1%	51.1%	29.8%
Hyperacidity	22	0 %	45.5%	22.5%	32%

Chart 3.

these be considered examples of organic disease it brings the total of that group to 22.8 per cent of all cases.

The cases of organic disease consisted of five

#### 150 Fractional Analyses

<b>Achylia</b>	<b>21.3%</b>	<b>or</b>	<b>32 cases</b>
<b>Hypoacidity</b>	<b>32.6%</b>	<b>or</b>	<b>49 cases</b>
<b>Normal</b>	<b>31.3%</b>	<b>or</b>	<b>47 cases</b>
<b>Hyperacidity</b>	<b>14.8%</b>	<b>or</b>	<b>22 cases</b>

Chart 4.

carcinomas of the stomach, twenty duodenal ulcers, four gastric ulcers, and one gastrojejunal ulcer, or 20 per cent of the total (Chart 4). The cases diagnosed as reflex conditions consisted of

forty-eight cases of subacute and chronic cholecystitis, eight cases of chronic appendicitis, and eighteen cases on which final diagnosis was such as to account for reflex gastric symptoms, for example, early cardiac decompensation, chronic foci of infection, pancreatitis and duodenitis.

Of the functional group there were twelve cases of visceroptosis and thirty-four cases of functional neurosis.

Considering this group of patients in the terms of value received, in diagnosis, from a single gastric analysis, we find in the conditions of hyperacidity 45.5 per cent of the cases coming under the group of organic disease, 32 per cent functional disease, and 23.5 per cent reflex conditions. To be more exact, the conditions to be considered in order of frequency are ulcer, duodenal or gastric, functional neurosis, chronic appendicitis, and chronic cholecystitis. Considering this same group, Sager and Hartman,<sup>6</sup> working on a much larger group of patients, would consider the order of frequency of disease condition as follows: functional neurosis, ulcer of duodenum or stomach, cholecystitis, and lastly appendicitis.

On those patients studied which showed normal acidity, the order of frequency was as follows: reflex gastric conditions 51.1 per cent, functional disturbance 29.8 per cent, and organic disease 19.1 per cent. No similar group comparison could be found in the literature.

Where hypoacidity occurred, reflex gastric symptoms accounted for 51 per cent of the cases, chronic cholecystitis producing over 65 per cent of these. Functional disease occurred in 34.8 per cent of the hypoacidity cases, and organic disease in 12.2 per cent. Conditions in order of frequency were: chronic cholecystitis, functional neurosis, visceroptosis, chronic appendicitis, ulcer of duodenum and stomach, and carcinoma. In their work, Sager and Hartman placed functional neurosis, reflex, and malignant disease, in the order of frequency.

Thirty-two of our cases showed anacidity, fifty per cent proved to be in the reflex group, 25 per cent due to organic disease, including carcinoma and pernicious anemia, and 24.9 per cent functional disturbances. In order of frequency, definite accompanying conditions occurred as follows: chronic cholecystitis, functional neurosis, pernicious anemia, ulcer, and carcinoma. Hart-

man and Sager,<sup>6</sup> in their study of anacidity, found conditions to occur in order of frequency as follows: carcinoma, chronic cholecystitis, functional neurosis, pernicious anemia, ulcer.

Comparing our entire group of patients with those of Hartman and Sager, it will be seen that there is considerable variation in end-results. This can be explained by the fact that ours was a much smaller series and tests were made because of definite gastro-intestinal symptoms requiring differential diagnosis, in contrast to work done more as a routine in general examinations.

To go back to the title of this paper, *Of What Diagnostic Value is a Single Gastric Analysis?*—special emphasis being placed on the secretory power of the stomach.

We feel that it is of definite diagnostic aid in the condition of hyperacidity only, for even with the high limits of normal, as established in this paper, it is found to be associated with organic (ulcer) disease in 45.5 per cent of the cases. Also that the condition of anacidity can be made to be of more diagnostic value by modifying the procedure slightly. This can be accomplished as follows:

As the fractional extractions are made, a qualitative determination is made for free HCl. If this is not found at the end of the hour, the procedure is continued to 1.5, 2 or even 3 hours. This step is advised in view of the fact that many cases show delayed secretory power and that the percentage of cases showing anacidity will be definitely reduced by such a procedure.

In the cases of hypo- or normal acidity, little value in diagnosis can be obtained by means of chemical study other than the frequent association of hypoacidity with gallbladder disease. However, we are in no position to say that a like number of so-called normal cases would not show a like condition of lowered acidity.

#### CONCLUSIONS

1. Hyperacidity is associated with organic disease in 45.5 per cent of cases.

2. Organic disease occurs most frequently with hyperacidity and functional types of disorders are second in order of frequency.

3. Organic disease is associated with normal acidity in 19.9 per cent of cases.

4. In a group of cases with indications for gastric analysis having normal acidity, the symp-

toms are reflex in 50 per cent of the cases and functional in 29.3 per cent.

5. In hypoacidity cases, 55.8 per cent are reflex gastric conditions, 33.5 per cent functional disturbances, and 12.7 per cent organic disease.

6. In cases of anacidity, reflex gastric conditions, organic disease, and functional disturbance occur in order of frequency.

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## President's Letter

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COL. SWEENEY, who is the Commanding Officer at Fort Snelling, invited the profession of Minneapolis and Saint Paul to attend a review of the Reserve Officers Training Camp on the thirteenth of July and I feel sure that all those who attended were much impressed by the well-drilled appearance of the medical officers. There were men in line who looked to be sixty years of age who had given up two weeks of their time to sleep on hard cots, to drill in the hot sun wearing heavy uniforms and to study drill, and army sanitation. Nothing but a keen sense of duty would induce men of this age to sacrifice their physical comfort in this way. The retiring president of the American Medical Association, Dr. Jabez N. Jackson, was there during the entire period doing his bit and, I am informed by the regular officers, he refused any favors extended to him, insisting on living like the rest of the men. This is a young men's game and two weeks of training such as that given at Fort Snelling should be a wonderful thing from the standpoint of keeping physically fit and being ready for emergencies.

Fort Snelling is fast becoming one of the best if not the best army post in the country, so the regular officers say, and the opportunity to fraternize on such an intimate basis with medical men from the entire northwest must be a very broadening experience.

*C. B. Wright*

# EDITORIAL

## MINNESOTA MEDICINE

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## The Five Year Program of the Committee on the Cost of Medical Care

The attention of the laity as well as the medical profession has been directed recently to the study being undertaken by the Committee on the Cost of Medical Care by articles appearing in current lay and medical magazines. The subject is of great importance to the profession as well as to the public.

At an informal conference held April 1, 1926, in Washington, D. C., attended by some fourteen physicians, sanitarians and economists interested in the question of the high cost of medical care,

a committee of five was appointed to formulate plans for a complete study of the aspects of medical service. As a result, a second conference was held May 7, 1927, in Washington at the time of the A. M. A. meeting and a committee of forty-two members was chosen to make a five year study of this tremendously important subject. The standing committee includes six representatives of the field of public health; eight representatives of various institutions and organizations; five economists, and nine representatives of the general public. Of the forty-two members, twenty-three hold the degree of Doctor of Medicine. A perusal of the personnel of the committee headed by Dr. Ray Lyman Wilbur, president of Stanford University, indicates that the committee is well chosen. The undertaking will require the expenditure of some \$300,000 during the five year period and has been made possible by the support of the Carnegie Corporation, the Millbank Memorial Fund, the Russell Sage Foundation and the Twentieth Century Fund. The A. M. A. is planning to make one or more important studies at its own expense and the Metropolitan Life Insurance Company and the United States Public Health Service will also cooperate.

The first publication of the committee, under date of February 13, 1928, calls attention to the crying need for such an investigation and outlines the contemplated five year study. After perusing the list of subjects to be investigated we can think of no phases of the problem that have been omitted. The committee, with no preconceived idea as to the solution of the problem, proposes to obtain a mass of information as to family incomes, cost of medical care in large and small cities and in rural communities, prevalence of disease, possibilities of preventive medicine, cost of medical education, income in private practice, capital investment in hospitals and clinics, industrial medicine, pay and free clinics, types of medical insurance; and then hopes to make some recommendations.

We admire the temerity of the committee in attacking such a gigantic economic problem and any comment on the investigation here must of necessity be brief.

The high cost of living is not limited by any means to the field of medical care. The information obtained by the committee should show whether the cost of medical care has greatly outstripped other living costs.

The problem of meeting the economic loss incident to sickness and accident is not a new one. Various expedients have been resorted to such as free hospital and medical service, endowment of private hospitals, workmen's compensation laws and other types of insurance, and graded medical fees. The state has taken a hand in the treatment of certain long disabling diseases, notably tuberculosis and mental disease. It has also interested itself in preventive measures such as the prevention of the spread of venereal and contagious disease by free treatment and vaccination. Although the institution of such activities on the part of the state met with opposition from certain members of the profession, such participation on the part of the state has as a matter of fact relieved private medical practice of an enormous burden.

Certain causes of the high cost of medical care are obvious:

In the first place should be mentioned the depreciation of the almighty dollar. Then, too, the high standard of living, buying on the installment plan, the automobile curse (as some have described it) all tend to make the meeting of the unexpected medical expense a hardship.

Modern hospital service is much superior to that furnished a few years ago. Aside from the greater personal comfort supplied the patient, the facilities for laboratory diagnosis and medical and surgical treatment supplied are expensive. Over-hospitalization of a community is also an extravagance.

Increase in the cost of nursing and the shortening of hours, while a justice due the nursing profession, contributes to the increase in cost of medical care.

From the standpoint of compensation to the physician much may be said. Seven years spent in medical training justifies a fair return on the investment of time and money. The cost of office maintenance, office equipment, automobile and that important item of incidentals has rightly raised medical fees. General remarks as to proper fee schedules are impossible inasmuch as there is no general uniformity. Specialization has come to be a necessity in medicine. The ad-

ditional expense of training in a specialty and the rightfully increased return due those specially skilled or experienced have to be considered. Parenthetically, we might remark that, as compared with fees and commissions paid out to other professions and in high finance, many medical fees are ludicrously low.

The public and the medical profession will await with considerable interest the final report of the committee's investigation. Its findings as to the average cost of medical care to families in the so-called middle strata economically speaking; the average gross and net income of general practitioners and specialists; hospital facilities in the small and large communities—should be of value.

And as to committee recommendations. We trust the committee will not be influenced by socialistic or Utopian ideas destined to disturb the personal relations existing between patient and physician. We still maintain that the state should not take over any activities which private enterprise can handle, for the reason that private initiative has proven to be more efficient.

Sickness and accident are existing risks which, like fire, tornado, theft and death, threaten each individual and family unit. Insurance relieves the loss from these other risks; why should it not help to alleviate the high cost of medical care?

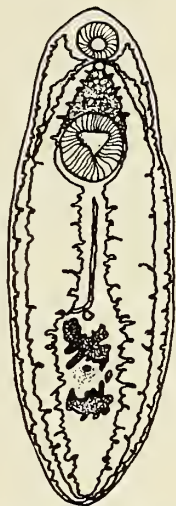
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#### A Fish Parasite Often Mistaken for the Larva of the Broad Tapeworm, *Diphyllobothrium Latum*

The wide publicity which has been given recently to the finding of the larvæ of the broad tapeworm, *Diphyllobothrium latum*, in native fish has stimulated an unusual number of inquiries regarding worms of various types from this source. Many of these inquiries relate to mature tapeworms found in the intestines of the fish and it is obvious to anyone acquainted with the life history of cestodes that these tapeworms have no relation to the human parasites. Not infrequently roundworms are submitted for examination as tapeworms, but even a superficial examination of these will exclude them on the basis of shape and size. They, too, are most commonly found in the intestines or in the body cavity.

There is one parasite, however, which is very commonly found in the flesh of food and game fish and which is the most frequent object of

mistaken identifications. As fish are usually prepared, moderate infestations are overlooked, but, when they are skinned, it is readily seen in the form of little opaque creamy-white cysts measur-



Larval fluke from the muscle of a small-mouthed bass. (X10.)

of equal breadth throughout. It differed also from a tapeworm in the fact that an alimentary canal and mouth-opening were clearly present.

Technically, this immature fluke from the flesh of fish is known as *Clinostomum marginatum*. It is apparently most commonly found in perch but has been reported from rock bass, black bass, sunfish, brook trout, and bullheads as well as from some other fish not used as food. The worm matures to adult stage in various fish-eating birds. It is incapable of developing in man, though, of course, knowledge of its presence in the fish is disturbing. Heavily infested fish may well be considered unwholesome. The parasite is widely distributed throughout at least the Eastern United States and parts of Canada and must be regarded as of considerable economic importance since it is the cause of enormous numbers of so-called "grubby" fish being discarded.

WM. A. RILEY,  
Dept. of Zoology,  
University of Minnesota.

ing, on the average, about one-sixth of an inch in diameter.

My attention was first directed to the common occurrence of these parasites in Minnesota fish some ten years ago when I was asked to make a study of conditions in a lake in Mahanomen County which was noted for its abundance of black bass. The writer of the request complained that the bass from this lake were all infested by a parasite dangerous to man and suggested that taking fish from it should be prohibited. Interested as I was in the occurrence of the broad tapeworm of man in this section, I naturally supposed that the complaint referred to larvæ of this parasite.

The first fish caught was heavily parasitized and it was clear that the infestation was not due to a tapeworm but to a fluke. When the rounded cysts were torn open in the process of skinning or for examination, they were found to contain an elongate flatworm measuring from one-fifth to one-third of an inch in length and one-twelfth of an inch or less in breadth. At the anterior end was to be seen a mouth-opening, surrounded by a muscular sucker and about one-fifth of the distance caudad was a prominent ventral sucker in the midline. Unlike the larva of the broad tapeworm this fluke larva did not taper rapidly to the posterior end but was, roughly speaking,

### Angina Pectoris

Those interested in this dramatic disease entity (said to be singularly a doctor's reward after a busy life) should carefully read an article by Keefer and Resnik.\* The century-old strife as to its direct causation (from Heberden's classic description, through the efforts at elucidation of Huchard, Mackenzie and Albutt) is frankly and logically discussed. The writers have read much, and analyzed their data in terms of another conclusion that has had not a little attention in more recent years, namely, anoxemia of the heart muscle. The article itself should be read. The authors' plea for caution in making the diagnosis of angina pectoris; their assertion that the tendency to sudden death must ever be emphasized, both in making a diagnosis, and venturing a prognosis; their weighing of the status of the coronary arteries as blood carriers (degree of narrowing or sclerosis); the patency of the coronary ostia (syphilitic obstruction); the competency of the aortic valve cusps determining diastolic blood pressure (both in syphilitic and rheumatic aortic valve insufficiency)—all must meet with the

\*Keefer, C. S., and Resnik, W. H. Archives of Int. Med., Vol. 41, No. 6, p. 769, June 28.

strong approval of those who have seen a good deal of such clinical and postmortem material.

Like other efforts, however, to solve long drawn-out controversies, one wonders whether the authors have given us something which is not likewise subject to challenge, even as they have challenged distinguished students of the past. In this connection one thinks in terms of how logically they may dispose of the question of "spasm in the coronary arteries"—diseased, as they are—when they admit that the influence of the nitrites come through vasodilatation. If these arteries can dilate why should they not be able to contract? If, in like manner, the drop in diastolic pressure incidental to aortic insufficiency determines the failure in blood flow to the heart muscle through the coronaries, how is it that attacks of angina pectoris are terminated by lowering the diastolic pressure through these drugs?

Giffin (of the Mayo Clinic) has reported the syndrome of angina pectoris in pernicious anemia; the patient losing the attacks after blood transfusion and showing at autopsy patulous and normal coronaries. The authors hold such experiences as strong support for the anoxemic theory of anginal causation. They do not, however, mention the possible influence of low blood pressure or lessened blood volume in pernicious anemia. Viewed abstractly, one hesitates, in analyzing the whole situation, to put the whole blame on oxygen lack—vital though it is—since the blood is the conveying medium of nearly everything that comes to the tissue cells or leaves them. Ordinary anginal seizures and coronary occlusions are contrasted in an orderly manner, significant of the great interest of the last three years in the latter entity.

E. L. T.

MISCELLANEOUS

GOITER SURVEY OF MARTIN COUNTY

During the school year 1927-1928, a goiter survey was made of school children in Martin County, Minnesota. The Junior High School examinations were made by a local physician with the aid of the county nurse and a student nurse. All other examinations were conducted by the county nurse. The following official report by the Administrative Board of the Martin County Public Health Association was made by Miss Esther

Johnson, the Martin County nurse, at the annual meeting of the society, June 5.

GOITER SURVEY MARTIN COUNTY, 1927-1928

	Number Examined	Incidence	Girls	Boys	(Degree) Enlarged*			Under Treatment†
					1	2	3	
High Schools Ages 14 to 18	422	169 (40%)	144	25	129	37	3	9
Junior High School at Fairmont. Ages 12 to 15	169	69 (40%)	43	26	62	6	1	0
Grades 6 to 15	2884	335 (12%)	243	92	285	47	3	7

\*1—Slight enlargement; 2—moderate enlargement; 3—greatly enlarged.

†The number appearing in the column "under treatment" indicates the number of children being treated at the time of the survey.

Editor's Note: While the degree of enlargement of thyroid gland is much a matter of individual interpretation, this survey adds further evidence of the prevalence of goiter in Minnesota and the need for more intensive preventive treatment as a public health measure in the state.

ADDRESS OF GREETING TO THE AMERICAN  
PSYCHIATRIC ASSOCIATION, AT MINNE-  
APOLIS, MINNESOTA, JUNE 5, 1928

C. EUGENE RIGGS, M.D.  
*Saint Paul*

Mr. President, Members of the American Psychiatric Association:

Eighty and four years ago, there gathered on October 16, 1844, in the Hotel Jones, in Philadelphia, a city justly famous for the part it has played in the upbuilding of a great nation, a nation standing unafraid among the nations of the world, because it is grounded on justice and equity and its reverence for the sacredness of human rights, thirteen men, immortal in the annals of American psychiatry, organized as an association of Medical Superintendents of the American Institutions for the Insane. Thirteen asylums were represented. The association was reorganized in 1882 as the American Psychological Association and in 1891 its name was again changed to the American Psychiatric Association.

Eighty and four years have passed since that epochal meeting. Think of the paucity of psychiatric knowledge in 1844, and the remarkable achievements of 1928! These thirteen pioneers built but with no material to build with. They made a trail through once untrodden

ways. They sleep in peace but their work made this great meeting of today possible.

During the session of four days, the discussions centered around such subjects as: "The Moral Treatment of Insanity"; "Medical Treatment of Insanity"; "Jurisprudence of Insanity"; "Statistics of Insanity"; and "Constructions of Insane Hospitals."

They accepted the invitation of Dr. Kirkbridge, Superintendent of the Pennsylvania Hospital, to visit his Institution. The report states they were much pleased. They then visited the Eastern State Penitentiary, where they discussed the influence of prison life on the patient, and appointed a committee to report on the influence of different systems of prison discipline in causing insanity. The editor of the *Journal of Insanity* wrote of this meeting: "We believe we but express the opinion of every member of this association that this their first meeting was far more interesting and profitable than they anticipated and the only regret in relation to it was that it could not be of longer duration."

Allow me to recall attention to a tragic fact of history. A quarter of a century ago, there raged a bitter war between the twin cities, as to which was the larger; one accused the other of robbing the cemeteries to increase their directories. Today, all know that Minneapolis has attained her numerical superiority and St. Paul heartily congratulates her in having so splendidly arrived. My Minneapolis confrères, with great generosity of spirit, asked me, a St. Paul man, to extend to you, members of the American Psychiatric Association, a most cordial greeting and welcome to this city beautiful—Minneapolis—a city of great industries, beautiful homes, attractive boulevards, charming lakes, and last, but not least, the State University. With great cordiality are you also welcomed by the psychiatrists of the Twin Cities, the State, and the Minnesota Neurological Association.

Mrs. Riggs and I were in Edinburgh when this unnatural feud was at its greatest height. I was working in the laboratory of the Royal Morning-Side Asylum, whose Superintendent was Sir Thomas Clouston, whom I regard as the greatest alienist of his day. Dr. Batty Luke graciously gave me a dinner. Among those present was Sir William Turner—the last, I believe, of the great Scotch anatomists—who, during the course of the evening, asked me why Minneapolis would not allow the Bible to be read in the public schools. Not wishing to deny him an anticipated pleasure, I asked: "Why?" He immediately replied, "Because it contains the Epistle of St. Paul." The celebrated Scotch Surgeon, John Chiene, of Edinburgh, whenever he would meet me on the street, always shook hands most cordially—then would remark, "Oh, Dr. Riggs, of Minneapolis, I believe."

"Lost battles over—let them be,  
Bury thy dead, O Memory."

Medicine has progressed upward by slow and lagging steps. Rarely does one discovery follow another in quick succession, causing an upward impetus as irresistible as that of a tidal wave. Twenty-five years after Pinel so dramatically struck the shackles off of the insane at the Bicêtre, his progressive ideas had not

advanced one step. Read his pupil Esquirol's burning philippic regarding their condition. It is not my purpose to discuss psychiatry. For me it possesses a lure no other department of medicine does. If what scientists tell us is fact—that the human brain is undergoing a process of transformation—that it has not as yet reached its ultimate evolutionary goal—that there are large areas of brain cells now latent and when these begin to function and the brain has reached its predestined goal, the change in personality will be inconceivably great—such a personality of which sages have dreamed and poets have sung.

Unusual men—these thirteen pioneers—men appearing at the fulness of time—men possessing great courage—selfless men, keen of vision and aflame with a consuming ardor to care for the insane and the defective. Unconsciously to themselves, they laid deep and broad the foundation upon which the great temple of Modern Psychiatry stands.

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## OBITUARY

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### Dr. Hugh W. Reynolds

Dr. Hugh Williamson Reynolds died Saturday, June 30, 1928, at his home in Hibbing, Minnesota. The cause of death was pneumonia complicated by meningitis.

Dr. Reynolds graduated in 1914 at the University of Minnesota. He spent one year as interne in the Minneapolis General Hospital, and following that went to Hibbing, where he had practised since that time, except during the war, when he was in the service for about two years.

He is survived by his widow and two small children, a boy and a girl.

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### Dr. P. M. Hall

Dr. Pearl Mitchell Hall, for 10 years superintendent of the Walker Sanatorium, Walker, Minn., died of heart disease, July 18, at Walker, at the age of 67.

Dr. Hall was born at West Jefferson, Ohio, Oct. 19, 1860. He was educated at the University of Minnesota and at the Hahnemann Medical College, Chicago. He was among the early students of the University of Minnesota shortly after it was organized and received his doctor's degree from the Hahnemann in 1882.

Previous to his appointment as superintendent at the Walker sanatorium, July 21, 1918, Dr. Hall lived in Minneapolis, where he was medical inspector of the health department in 1897-98. From 1901 to 1918 he was commissioner of health.

Dr. Hall was the most efficient superintendent the state ever had, in the opinion of members of the State Board of Control. He was held in high esteem by his co-workers as well as his patients.

Surviving Dr. Hall are his wife, Judge Hall and another son, Francis, of Minneapolis; and a daughter, Mrs. Lloyd Duntley, of Fargo, N. D.

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## ♣ COMMITTEE ON PUBLIC HEALTH EDUCATION ♣

### Our Newspaper Service

We quote the following from a letter received some time ago from one of the members of our Association:

"I certainly believe that the Medical Profession should be the source of leadership in every movement intended to better human health and if it cannot maintain this leadership then maintaining contact with organizations willing to spend money to induce people to use the wisdom of the Medical Profession and pay for it, would be the very next best thing. And the closer contact we can keep as a body, both dentists and physicians, with the people who influence public thought, to see to it that such thought is influenced along the right lines, the better off we will be.

"I attended a meeting of seven counties in Wisconsin holding their district meeting and their secretary reported that they had had articles in more than two hundred of the weekly papers of Wisconsin and in more than fifty daily papers and he exhibited clippings from these various papers which represented a tremendous amount of work. The medical men of Wisconsin seemed to be very well pleased with the character of this work. I sincerely believe that Medicine has sat still long enough allowing the other kinds of health organizations to get a strong lead of them and it is decidedly wrong. Medicine has remained in the archaic period while everything else including the Chiropractors are adopting present day methods. The sooner the medical profession makes up its mind to use its brains to help itself as well as humanity the better it will be for all concerned."

After receiving several such letters from the profession and many requests for health news from the newspaper men in Minnesota, The Committee on Public Health Education, on the first of June, instituted a press service similar to the one in Wisconsin. We are very fortunate in being able to secure from the State Medical Society of Wisconsin a duplicate of their service at a very small cost.

Leading physicians of the Medical Society of Wisconsin are invited to prepare 500 word statements on timely topics. The public wants to know the cause of disease; whether or not it is contagious; whether the medical history shows that the disease can be checked, and what medical science has to offer at the onset, before a physician can be reached. Every effort is made to avoid the creation of undue alarm but no effort is spared to give the facts about the disease in their proper setting.

The editor of the Wisconsin State Medical Society's news service is a trained newspaper man with much experience. With the aid of a medical dictionary he translates the physicians' original statements on assigned subjects into simple terms—words and phrases that the average person with an eighth grade education will understand. After the newspaper man has rewritten the story it is submitted to the secretary of the Medical Society, who resubmits it to several physicians interested in that very disease. It then comes back to the press man with their suggestions and after revision it is ready for the press. Thus the stories come to us and the Committee adapts and fits them to conditions in Minnesota and then they are released to the papers throughout the state. In this way we are able to give the public the very best health news.

This service was not instituted to promote the interests of any physician or group of physicians. No name of a physician ever appears in any of the news releases. This information is not furnished to promote individuals, but placed before the readers solely in the public interest.

These weekly stories go to one hundred and eighty-six papers throughout Minnesota. There are about four hundred and fifty newspapers in the state. We want you to check up and see whether the papers in your county are getting this service. The service is free; all that the editor must do is to write to the Secretary's office, 11 West Summit Avenue, Saint Paul, asking to be put on our mailing list.

If your paper is taking this service, compliment the editor and have your friends speak to him also. We are trying to make this a real contact with the public and it is only by the coöperation of every member of the State Association that we can make headway in this problem. The progress must necessarily be slow.

## REPORTS AND ANNOUNCEMENTS OF SOCIETIES

### PROGRAM OF THE NORTHERN MINNESOTA MEDICAL ASSOCIATION, ANNUAL ASSEMBLY

Fergus Falls, Minnesota, August 20 and 21

The annual assembly of the Northern Minnesota Medical Association will be held at Fergus Falls, Minn., on Monday and Tuesday, August 20 and 21. A portion of the program will be held at the State Hospital, where the unusual material and facilities of that large institution will be available. The registration and meeting of Monday forenoon will be held in the rooms of the Chippewa Club.

*Monday, August 20*

8:30 A. M.—Registration

9:30 A. M.—Classification of Intestinal Obstruction

Dr. O. N. Nelson, Battle Lake

Heart Symposium—

a—Classification of Heart Disease

Dr. E. T. Bell, University of Minnesota

b—The Diagnosis and Treatment

1—Infectious Type

Dr. E. L. Tuohy, Duluth

2—Non-infectious Type

Dr. H. L. Ulrich, Minneapolis

c—The Roentgenologic Diagnosis

Dr. Leo. G. Rigler, Minneapolis

Noon Intermission

1:30 P. M.—Psychiatry Clinic, at the State Hospital

Dr. W. L. Patterson and Staff

Early Human Embryology, with Lantern Slides

Dr. F. C. Schuldt, St. Paul

Paper on Fractures, with Demonstration

Dr. A. E. Wilcox, Minneapolis

Surgical Clinic

Dr. W. J. Mayo, Rochester

7:00 P. M.—Banquet and Program, Dr. C. B. Wright, Toastmaster

a—Remarks—Dr. W. J. Mayo, Rochester

b—President's Address—Dr. F. J. Hirschboeck, Duluth

c—Talk—Dr. J. T. Christison, St. Paul

d—Dancing

*Tuesday, August 21*

8:30 A. M.—Injection Treatment of Varicose Veins

Dr. A. F. Bratrud, Minneapolis

Neurologic Diagnosis

Dr. E. M. Hammes, St. Paul

The Value of Conservative Treatment in Lesions of the Stomach and Duodenum

Dr. D. C. Balfour, Rochester

Pediatric Paper

Dr. F. C. Rodda, Minneapolis

Present Viewpoints on Essential Hypertension

Dr. Geo. E. Brown, Rochester

Diagnostic Dialogue—Case History Presentation

1:00 P. M.—Complimentary Luncheon, Park Region Medical Society.

The afternoon will be given over to golf, other forms of recreation and a visit through the State Hospital. Most generous entertainment has been provided for the ladies. This will consist of drives, a trip to the various lakes, and afternoon teas. Remember that the annual assembly of "Northern Minnesota" is the *big meeting* for the ladies.

M. O. OPPEGAARD, M.D.,  
Secretary.

### WABASHA COUNTY MEDICAL SOCIETY

The annual meeting of the Wabasha County Medical Society was held at Plainview, Thursday, July 5, 1928.

Twenty-two were present at the dinner: Twelve members, one affiliated dentist, two medical men from outside the county, and seven accompanying ladies.

#### PROGRAM

President's Address—Medical Progress in Wabasha County Since the Founding of this Society: Dr. W. J. Cochrane, Lake City.

Specialism: Dr. D. P. Dempsey, Kellogg.

Functional Dyspepsia: Dr. D. M. Masson, Rochester, Mayo Clinic Staff.

A Review of the 1928 Interstate Post-Graduate Assembly Tour: Dr. Arnold S. Anderson, St. Paul, Office of Board of Control.

#### OFFICERS ELECTED

President—Dr. D. P. Dempsey, Kellogg.

Vice President—Dr. D. S. Fleischhauer, Wabasha.

Secretary-Treasurer—Dr. W. F. Wilson, Lake City, (served continuously since 1896).

Delegate—Dr. J. A. Slocumb, Plainview.

Alternate—Dr. H. E. Bowers, Lake City.

Censor—Dr. W. J. Cochrane, Lake City (three years).

Other Censors—Dr. J. F. Bond, Wabasha; Dr. J. A. Slocumb, Plainview.

At the business session, reports of committees were received. The Society pledged coöperation with the Committee on Public Health Education of the State Association and the secretary stated that some newspapers in the county had accepted the publicity service of that Committee, and at least one paper in the county had already published two of the articles.

It was voted to combine with either Winona or Goodhue counties in regard to taking up the proposed "University Short Post-Graduate Course for Physicians," in case either of these adjoining counties accepted the course at a time when it would be advantageous for this county to combine.

Doctor Wilson reported that he had acted as correspondent for this county in the matter of compiling a medical history of Minnesota and that some time in February he had returned the data to Dr. H. M. Work-

man, Secretary of the Historical Committee of the State Association. The historical data included brief biographical sketches of 103 physicians who at one time or another had practiced in the county since 1855, giving especial attention to the pioneer physicians; also an outline of the history of the Wabasha County Medical Society since its founding in 1869, a sketch of the various hospitals and sanatoria that had existed in the county, and other material.

The social features of the meeting consisted of a dinner served at the home of Dr. R. R. Loney, and special entertainment for the ladies in the afternoon. The families of the other physicians and dentists of Plainview assisted Dr. and Mrs. Loney in the very hospitable entertainment of the Society and guests.

W. F. WILSON, M.D., Secretary.

#### WEST CENTRAL MINNESOTA MEDICAL SOCIETY

Members of the West Central Minnesota Medical Society had their annual outing at Browns Valley, July 8, 1928.

The members of the society and ladies were the guests of Drs. Bates, Weir and Walfred at a chicken dinner served in the club house on the golf course. The day was spent in golfing, boating and bathing. The society had a very enjoyable time, and many thanks are due to the hosts who entertained us so royally.

HERMAN LINDE, M.D., Secretary.

#### RICE COUNTY MEDICAL SOCIETY

Rice County Medical Society held a special meeting Thursday, July 5, in the Faribault Clinic Rooms.

Dr. D. E. McBroom, delegate to the Minnesota State Medical Association gave his report of the meeting.

Dr. T. R. Ponton, Medical Adviser of the Gorgas Memorial Institute, talked on "The Periodic Examination."

Mr. Robert O. Jones, Associate Director of the Memorial, addressed the society on "Medical Health Economics."

C. J. PLONSKE, M.D., Secretary.

### OF GENERAL INTEREST

Dr. Edwin C. Muir, son of the late Dr. E. S. Muir of Winona, is now practicing at Minneiska, Minnesota. (U. of Minn. Med Sch., 1925.)

Dr. Wm. Stryker, formerly teaching fellow in the department of pathology, University of Minnesota, has recently located at Plainview, Minnesota.

Dr. A. H. Brown of Pipestone, Minnesota, is spending the summer months in Europe in study and travel. Dr. Brown expects to return to his practice sometime in October.

Dr. H. A. Miller and Dr. H. G. Blanchard, formerly of Waseca, Minnesota, are now associated in practice with Dr. V. H. Gardner at Fairmont, Minnesota, in the Fairmont Clinic and Hospital.

Dr. J. D. Geissinger, who has been practising medicine in Saint Paul for a number of years, has moved to

Pueblo, Colorado, where he will have charge of the pediatric department in the Pueblo Clinic.

Dr. Donald C. Balfour of the Mayo Clinic, Rochester, was recently elected chairman of the Section on General and Abdominal Surgery of the American Medical Association at the recent Minneapolis meeting.

Dr. E. Covell Bayley has located at Lake City, Minnesota, taking over the practice of his father, the late Dr. Emery H. Bayley. Dr. Covell Bayley has just returned from a trip, as ship's surgeon, to South America.

At the Ancker Hospital, Saint Paul, Dr. Gordon E. Strate has been appointed assistant superintendent; Dr. Seymore R. Lee, resident in obstetrics and gynecology; Dr. Carl Langenbahn, resident in surgery; Dr. Cecil Warren, resident in surgery; and Dr. Raymond Richards, resident in medicine.

Dr. Arnold Anderson, formerly of the Buena Vista Sanatorium at Wabasha, Minnesota, is now in charge of the Tuberculosis Division of the Minnesota Public Health Association with headquarters in Saint Paul. Dr. Russell H. Frost succeeds Dr. Arnold S. Anderson, as medical superintendent of Buena Vista Sanatorium.

Dr. H. B. Bailey of Ceylon, Minnesota, with his wife and two children, are motoring through the East visiting Niagara, Montreal, Quebec, New York, Washington, D. C., St. Louis and Chicago. Dr. D. T. Armand, who recently completed his internship at St. Mary's Hospital, Minneapolis, is taking care of Dr. Bailey's practice during his absence.

Dr. Joel C. Hultkrans of the Saint Paul Nervous Clinic and Dr. James J. Swendson of the Earl Clinic left Saint Paul on June 28, by automobile, for Boston, Massachusetts, where they will do a month's post-graduate work at Harvard Medical School. Dr. Hultkrans will take work in the neuro-psychiatric department and Dr. Swendson will spend his time in the department of gynecology with Dr. Graves.

The Minnesota Society of Internal Medicine is offering a prize of \$250.00 for the best work presented to the Society during 1928. The prize is awarded to the practising physician, exclusive of members of the Society in the State of Minnesota, who has been deemed most worthy to receive a prize in research in clinical medicine. Theses will be received by the secretary, Dr. Edwin L. Gardner, 610 Yeates Building, Minneapolis, Minnesota, up to October 1, 1928.

The new Children's Hospital, 311 Pleasant Avenue, Saint Paul, was formally opened with befitting ceremonies on the afternoon of July 17, 1928. Addresses were given by Dr. Joseph Brenneman, chief of staff of the Children's Memorial Hospital of Chicago; by Dr. Henry F. Helmholz, professor of pediatrics, Mayo Foundation, Rochester, Minnesota, and by Dr. Frederic W. Schlutz, chief of the Department of Pediatrics, University of Minnesota, before a large gathering of lay and medical friends of the new hospital and its chief of staff, Dr. Walter R. Ramsey. The completion of the Children's Hospital is due in large measure to the untiring efforts of Dr. Ramsey, ably assisted by Mr. William Darling.

## NEW AND NON-OFFICIAL REMEDIES

The following articles have been accepted by the Committee on Pharmacy and Chemistry:

ABBOTT LABORATORIES

Tablets Ephedrine Hydrochloride-Abbott,  $\frac{1}{4}$  grain  
DESHELL LABORATORIES, INC.

Petrolagar (Unsweetened)

MEAD, JOHNSON & CO.

Mead's Standardized Cod Liver Oil, Flavored

PARKE, DAVIS & CO.

Glaseptic Ampoules Ephedrine Sulphate-P. D. & Co.,  
0.05 Gm. ( $\frac{3}{4}$  grain), 1 c.c.

Capsules Ephedrine Sulphate-P. D. & Co., 0.05 Gm.  
( $\frac{3}{4}$  grain) Paroidin

PROPHYLACTO MFG. CO.

Capsules Ephedrine Hydrochloride-Pemco, 0.3 Gm.

Capsules Ephedrine Hydrochloride-Pemco,  $\frac{1}{4}$  grain

E. R. SQUIBB & SONS

Squibb's Vitavose

SWAN-MYERS CO.

Gentian Violet Capsules-Swan-Myers, 1 grain

### TRUTH ABOUT MEDICINES

*Pollen Extracts-Swan-Myers (New and Non-official Remedies, 1928, p. 38).*—Also marketed in packages of one vial containing 2,000 units. Swan-Myers Co., Indianapolis.

*Concentrated Pollen Extracts-Swan-Myers.*—In addition to the products listed in New and Non-official Remedies, 1928, p. 30, the following product has been accepted: Biennial Sage Concentrated Pollen Extract-Swan-Myers. Swan-Myers Co., Indianapolis.

*Glaseptic Ampoules Solution Glucose, 50 per cent, 20 c.c.*—Each ampoule contains dextrose U. S. P., 10 Gm., in distilled water, to make 20 c.c.; buffered with sodium citrate, 0.25 per cent. Parke, Davis & Co., Detroit.

*Glaseptic Ampoules Solution Glucose, 50 per cent, 50 c.c.*—Each ampoule contains dextrose, U. S. P., 25 Gm., in distilled water, to make 50 c.c.; buffered with sodium citrate, 0.25 per cent. Parke, Davis & Co., Detroit. (Jour. A. M. A., June 16, 1928, p. 1945.)

*Bismuth Sodium Tartrate-Searle.*—A basic sodium bismuth tartrate containing from 72.7 to 73.9 per cent of bismuth. Its use is proposed as a means of obtaining the systemic effects of bismuth in the treatment of syphilis (see Bismuth Compounds, New and Non-official Remedies, 1928, p. 104). The product is administered by intramuscular injection. It is supplied in the form of 2 c.c. ampules containing bismuth sodium tartrate-Searle, 0.03 Gm., benzyl alcohol, 0.040 Gm., sucrose, 0.5 Gm. in water sufficient to make 2 c.c. G. D. Searle & Co., Chicago.

*Tablets Ephedrine Hydrochloride-Abbott,  $\frac{1}{4}$  grain.*—Each tablet contains ephedrine-Abbott (New and Non-official Remedies, 1928, p. 176)  $\frac{1}{4}$  grain. Abbott Laboratories, North Chicago.

## PROCEEDINGS OF THE MINNE- SOTA ACADEMY OF MEDICINE

Meeting of April 11, 1928.

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town & Country Club on Wednesday evening, April 11, 1928. Dinner was served at 7 p. m. and the meeting was called to order by the President, Dr. John E. Hynes, at 8 p. m. There were 44 members present.

The scientific program of the evening consisted of two papers, and case reports as follows:

1. DR. M. S. HENDERSON (Rochester) read a paper on "Bone Cysts of the Upper End of the Femur," illustrated by lantern slides (See page 542).

### DISCUSSION

DR. A. C. STRACHAUER (Minneapolis): Dr. Henderson has given us a very valuable presentation of the subject of giant cell tumor. It is most unfortunate that this tumor, which is usually benign, has been known as a giant cell sarcoma. It is not a member of the sarcoma family, and the confusion arising from erroneously calling it "sarcoma" has led operators to perform numerous unnecessary major amputations. Bloodgood has been indefatigable in his efforts to correct this situation and has accomplished much good. Czerny, in the 80's, advocated conservative treatment for these tumors.

We have had a considerable number of giant cell tumors at the Cancer Institute and at the University Hospital. In the first year of my practice I conservatively treated a giant cell tumor of the lower end of the fibula. The patient is living and well and there has been no recurrence to date.

The evidence obtainable by the roentgen ray is as valuable, if not more valuable, than the microscopic examination. The chambered appearance, reminding one of the "Chambered Nautilus," is extremely characteristic and practically pathognomonic. Dr. Ewing states that the microscopic examination has often led him astray and he puts more dependence on the macroscopic and x-ray examinations for making a diagnosis. The tumors should be removed by curetting or local resection. Occasionally we have had to amputate on account of the extreme degree of local destruction that had taken place, as in the head of the tibia. Giant cell tumors have been reported by competent observers as giving rise to metastases. These reports are rare and the correctness of the diagnosis open to question.

In conclusion: Giant cell tumors are not members of the sarcoma group, do not metastasize, should be treated by curettage and local resection, and do not carry the indication for amputation except in cases of extreme local destruction in the lower extremity. They occasionally recur locally and should then be treated conservatively.

DR. A. SCHWYZER (St. Paul): A number of years ago Dr. Codman sent out an inquiry to the Fellows of the College of Surgeons about living cases of sarcoma of bone. I reported among others a case of giant cell

tumor I had operated in 1897. It was a tumor of the external condyle of the femur and had gone a little beyond the bone. It had involved the adjoining capsule and fibrous parts. We considered the tumor to be a frank sarcoma at that time and amputation was made. That woman is perfectly well today and Dr. Codman wrote me it was the oldest case they had with a complete record. Fortunately I still had the original microscopic sections, the specimen and history, and I still see the patient from time to time. It has been very difficult for me to make a diagnosis from the microscope. I would like to know a little more about the differentiation by the microscope. I had, a few years ago, two cases of tumor of the condyle of the femur. Both had been operated on by local excision by other surgeons and came with recurrence into my hands. I thought they were giant cell tumors. One I have operated upon several times since because of a repeatedly recurring growth, and there is nothing left of the condyle but a very thin bony shell. The young man still has a moveable joint today. He still has his leg but cannot use it very much and gets around with a crutch. He got large doses of x-ray. The other case had also been operated upon by local excision. When he came to us the mass had reappeared locally and I scooped the whole thing out. The man later died, apparently from lung metastases.

I should be glad if Dr. Henderson would tell us more about the microscopic differentiation, as I think we accepted the inflammatory theory of these giant cell tumors too much in bulk.

DR. H. B. ZIMMERMANN (St. Paul): I would like to ask Dr. Henderson if he considers the giant cell epulis and giant cell tumor the same thing.

DR. A. R. COLVIN (St. Paul): Several years ago I had an opportunity to study two cases that made a very lasting impression upon me. One of them was a case of enlargement of the upper end of the tibia in the service of, and that had been amputated by, the late Dr. Gillette in the earliest days of x-ray in St. Paul. The radiograph looked exactly like a bone cyst, and so it was thought better to explore it; amputation was done, as it was thought to be a sarcoma. I got the specimen and in all of my reading since that time I haven't lost track of that picture. The patient was a man about 54 years of age. The cavity was about the size of a large-sized hen's egg. The tumor-like material was made up of a raisin-colored mass of veal-loaf consistency that was made up largely of the kind of giant cells Dr. Henderson shows here. The limiting membrane of this tumor mass was just as definitely constructed as the inner membrane of an eggshell. It peeled right out. Of course, that could not be malignant. That was about twenty years ago, but at that time I made sections of the tumor, the membrane, and the contiguous bone, also the cartilage next to the bone. Nowhere had it invaded the membrane, the bone, or the cartilage. Clinically that was benign.

About the same time a young girl eighteen years of age came to me with a tumor of the femur, which was so rapidly growing that I wondered if it was osteomyelitis. At exploratory operation it was found to be

an infiltrating tumor, and I took some tissue for examination. I have microscopic slides of both of those tumors today, and I cannot see any difference between the histologic pictures in the encapsulated tumor and the infiltrating one.

Dr. Henderson's pictures of the upper end of the femur are very important. I wish Dr. Henderson would tell us a little more about the case that was a degenerating tumor and he thought was a cyst. Somebody has said it is so much easier to say "what a cyst is not than what it is." A bone cyst has a very thin almost translucent membrane with a clear yellowish fluid.

Regarding the diagnosis and the decision of what to do. There was not any question at all about this girl I spoke of. Histologically, I am quite sure if one explored a case not infiltrating so rapidly, a mistake might be made. Ever since those two cases I have laid down the rule for myself that I must have a very distinct limiting membrane for the tumor before pronouncing it benign. The microscope tells us a good deal, but in spite of all classifications, the giant cell tumor of bone is occasionally possessed of potentially malignant characteristics. The common epulis Dr. Zimmermann refers to will recur if it is not removed entirely. It seems to me the x-ray, combined with what you find when you explore, is just as valuable as the histologic findings.

DR. WALLACE COLE (St. Paul): There is one point which Dr. Henderson did not make very clear in his paper and which I think should be definitely accentuated, and that is, these giant cell tumors of bone certainly do perforate the cortex and invade the soft tissues but never infiltrate them; that is, the fibrous capsule of the tumor always remains intact. I have seen several of these cases where a lobulated mass of tumor was sticking out through the bone into the soft parts but where, on account of the intact limiting membrane, complete removal of the tumor was possible.

2. DR. E. S. JUDD (Rochester) read a paper on "Hirschsprung's Disease," illustrated by lantern slides. (Minn. Med., July, 1928.)

#### DISCUSSION

DR. C. B. WRIGHT (Minneapolis): I remember seeing one of these huge colons removed while I was a student. The little patient died the same day. It gave me early a prejudice against colectomy in this condition.

In 1924, I routinely examined 250 children at the Lymanhurst School by barium enema, and found two cases of megacolon, one a boy aged 8 and the other a girl aged 13. All of these children had been carefully studied by competent pediatricians without the condition being suspected. Sever found one of these cases in 83 routine studies, suggesting that about 1 per cent of children have this condition. None of these cases were extreme. The history of constipation from birth is characteristic.

I remember seeing two other extreme cases with very large abdomen. I have not been able to trace any of these cases. The reason we see this condition so seldom in adults is probably because they so seldom live to

adult life or possibly in some cases normal function is later established. Megacolon acquired in adult life suggests some organic obstructive condition. In true Hirschsprung's disease, no organic obstruction is found. Aside from daily large enemas, there is nothing to do as far as I know, medically. The parents of the four cases I recognized had all found this out for themselves. If the sympathetic system is at fault, as indicated by the brilliant results in these two cases, we have reached a new epoch in our knowledge of functional conditions of the colon and possibly other segments of the gastro-intestinal tract.

DR. E. L. GARDNER (Minneapolis): I am very much interested in this problem, especially the question of sympathetic control. I would like to know what has been the effect of these operations on the size of the colon after a barium clyster as compared with those taken before the operation. I have seen quite a number of megacolons in adults but do not have the chance to see many in children. Symptoms are few and the health remarkably good in many cases. One middle-aged woman just recently came in complaining of heaviness in the pelvis. She had always had normal bowel movements except when on a vacation, she said. She had been on an automobile trip and had not had a bowel movement for one month. With the help she received at the office she filled a pail full and walked out very happy. Sometimes the signs of atonic colon develop in people as they grow older. I have felt that there are many cases not necessarily of the congenital type, but who first have the trouble in expelling the stools, either due to spasm from fissures about the anus or from using cathartics for a long while, who upon starting to take enemas first get a dilatation of the rectum and then a dilatation of the colon farther up. There is a definite sequence of events. This whole question of the size of the colon is an interesting one. Where does the spastic colon leave off and where does the normal and the megacolon begin? If patients take large enemas over long periods of time it seems very possible that the large enemas may dilate the colon.

I think hygienic treatment is extremely important. I have kept the colons quite empty and have the patients use rather concentrated food with the idea of recovery of tonicity of the colon. A colon will adjust itself to stay in any position where it is accustomed to stay, possibly explained by Sherrington's law of postural tonus. If the colon is habitually dilated, it will often stay dilated. An enema of sweet oil every day or every other day is often helpful. I have felt that this type of colon in adults was materially aided by non-toxic doses of thyroid extract even where the basal metabolism is within normal limits.

DR. A. SCHWYZER (St. Paul): We surely have to thank Dr. Judd for having brought before us this interesting subject. As to the etiology of megacolon, we always divide between the one due to obstruction and the one which is congenital. I never could convince myself that this congenital type was analogous with other similar congenital hypertrophies. Such spontaneous hypertrophy and enlargement cannot be accepted readily and surely not before every possible difficulty

of emptying the gut is absolutely excluded. Just those last two cases that Dr. Judd showed us might give us a clue. To explain the result there must have existed beforehand a difficulty in the peristaltic action, which really means the same thing for the parts above as some kink or obstruction of the colon or rectum. Then we say that Hirschsprung's disease is seen in infants without any definite cause; that it is therefore congenital. The cases where we have an abnormal ending of the rectum into the vagina, or, as I saw in one case, in the bladder wall, have an excuse for their large colon; they have difficulty in emptying. One case in a small child with the most enormous colon I have ever seen, might be interesting in this connection. The child when seen had peritonitis from distention ulcers. There had been difficulty of emptying the bowel for a long while. Upon examination and some dilating of the anus a hard calcified mass about the size of a walnut flew out followed by a great quantity of fluid feces. Nothing else was done. The child died in a day or so. In the last two cases of Dr. Judd's, where sympathectomy had such good results, the dilatation and hypertrophy seem to have been due to a form or difficulty of passage, due to abnormal innervation. Thus the dilatation and hypertrophy appear again to be secondary and are made comprehensible.

DR. A. E. BENJAMIN (Minneapolis): I have seen a few of these cases. One I remember was an acute obstruction of the bowel in a woman 18 years of age. I went into the country to operate on her. The obstruction was in the descending colon. She gave a history of chronic constipation and partial obstruction. I found a hard mass just like baled hay in the bowel and a small opening in the center of it, through which the fecal current had passed. I incised the bowel and took the mass out. That was about five years ago and she has been well since.

It is difficult to know just what one is to do in these cases. I have tried taking out a part of the colon and making a side anastomosis and have found that quite satisfactory. Where cecum sigmoidostomy is done, it leaves the large bowel in the abdomen. X-ray in these cases shows that some of the barium would travel into the redundant loop, but the majority of it goes through the artificial opening.

DR. H. P. RITCHIE (St. Paul): Did I understand Dr. Judd to say that, in one case, one side only of the chain was taken out, and in the other both sides were taken? I suppose it is too early in our experience in this field to ask if there is a reason for excising one or both chains.

DR. JUDD (Rochester), in closing: Regarding Dr. Ritchie's question, Dr. Adson took out the 2, 3 and 4 sympathetic ganglia on the one side only in his first case because the condition involved just the sigmoid. A bilateral operation was performed in the second case as the condition was much more extensive and involved the entire colon. I think Dr. Royle and Dr. Wade carried out only a unilateral sympathectomy in their cases. I am sorry that I do not have postoperative x-rays of the colons of these children to present here tonight. Both of them are coming in for an examination this

week. We are anxious to see what changes have taken place in the size of the colon.

I presented this subject with mention of these two cases simply as a suggestion; I do not wish to be understood as advocating this form of treatment in all cases.

Dr. Gardner's and Dr. Wright's discussions brought out the essential points regarding Hirschsprung's disease (megacolon). All those doing abdominal surgery are well aware of the fact that colons vary a great deal in size. In some individuals they may seem to be definitely dilated and yet apparently function normally. I think what Dr. Gardner said about conservative treatment should be emphasized. Surgery should be employed only when obstruction is present and when conservative treatment fails.

3. DR. A. SCHWYZER (St. Paul) reported two cases:

Case 1. A woman 25 years old had several operations for ischio-rectal abscess with fistula following and incontinence since 1924. It seems tuberculosis was suspected but not demonstrated. For one year the patient, a violin teacher, has not been able to work. Much indigestion, nausea and diarrhea with loss of weight had been present. The diarrhea was almost constant during the past six weeks; four or five bowel movements daily. The incontinence persists. Weight 85 pounds. Dr. Watt, who studied the case very carefully, found a mass in the right iliac fossa which he considered as probably a tuberculosis of the cecum. And that is what the case proved to be.

On operation, which was done with local anesthesia with a small amount of gas and ether during the second half, the first gut seen was a fleshy, thick ileum loop which was rather rigid. It led to the cecum, which formed a thick mass. If you look at the roentgen picture, you will see the colon enema end somewhat irregularly, and laterally a fine thready shadow leads toward the pelvis. This I recognized as ileum, which was correct; but as I had not yet at that time examined the patient, the site and size of the tumor mass was not entirely clear to me and this thin thready shadow reminded me strongly of a case of fibroplastic appendicitis, where the ileum was stretched over and obstructed by a fibrous mass of the size of an orange, in the center of which we found the remnant of a gangrenous appendix. In that case, as in the one under discussion, an ileocolic resection had to be done. We always make an end-to-end anastomosis in resections of this type; the ileum is cut obliquely from the mesenteric attachment backward. This increases the nutrition of the cut edge and enlarges the lumen. Then the stitches are simply taken a little wider on the colon side. Three continuous linen sutures made a good inversion of the ends for about one inch and this insures against leakage. Omentum was wrapped around the suture and the abdomen closed tight. The wound was not more than four inches long. This was keeping the guts well in the abdomen and seemed very desirable in the worn-out patient.

The specimen shows the lowest six inches of the ileum very much thickened and rigid. On opening the gut this whole area was seen to be ulcerated. The cecum

was similarly changed and the appendix, whose base was ulcerated when seen from the inside, was thick and embedded in the thickest portion of the mass. Microscopic examination showed giant cells. The mucosa of the ileum was almost completely ulcerated away.

Case 2. A man, 76 years old, came to the office on account of spells of lower abdominal pain which he had had for thirty years every two or three years. Between spells he felt perfectly well. An *x*-ray examination showed a number of small diverticula of the colon. One, the size of a small marble, was seen on the cecum, a rather rare location. But I show you the case on account of numerous and very beautifully seen diverticula of small and large size in the uppermost jejunum loop. Here you see, besides small ones of the size of French peas, some as large as large walnuts. As the patient, upon questioning, declared he had distress also in the mid-abdomen and as he declared that he had to have something done for his pains, we operated in local anesthesia. The only tenderness on pressur  was in the appendix area; but we had to see what these jejunal diverticula meant. Through a moderate sized right rectus incision the uppermost jejunum loop was taken hold of. It looked normal to ordinary superficial inspection. The gut was free, flabby, regular in outline, and the mesenteric attachment was normal. Here you saw the little fatty specks near the gut (*x*-ray shown); and blood vessels were regular. Nothing abnormal was noticed. But we knew the diverticula were there. So I grasped the loop above and below and forced what air there was in the neighborhood into this loop. Now suddenly air popped into one of the large diverticula between the two peritoneal blades of the mesentery, then another and another and another popped full, corresponding exactly to the *x*-ray picture as you see it here. When our hold was released and the diverticula were again empty, nothing was seen. The walls of these diverticula were exceedingly thin but there was no trace of any inflammation anywhere.

On the inner aspect of the cecum, as you see here in the *x*-ray picture, there was the diverticulum we expected to find. An old thin whitish scar ran over it, but again it was very thin-walled and free from any recent inflammatory signs. The appendix, however, was reddish, hard and kinked and rolled up on its mesentery. It was removed. The patient, operated upon on March 26, is feeling very well and has no pain any more.

#### DISCUSSION

DR. A. T. MANN (Minneapolis): I would like to ask Dr. Schwyzer if he did anything to the large diverticulum?

DR. SCHWYZER: I did nothing with the diverticula. They were considered accidental findings. There were no signs of inflammation. The man was 76 years old; he has had no pain since the appendectomy, is up and about and very happy.

DR. E. S. JUDS (Rochester): I have seen quite a number of cases of tuberculosis of the cecum; I have also seen a number of cases of tuberculosis of the ileum. In my experience, however, the case which Dr.

Schwytzer reports is unusual because it seems to show a continuous involvement of the cecum and lower ileum. In most of the cases that I have observed the tuberculous process has been confined to the cecum. If the small bowel is affected, there are usually several separate areas of involvement with marked dilatation of the intestine between them. His case is very interesting and unusual.

His second case, that of diverticula of the jejunum, is also most interesting. It shows more extensive involvement by this condition than any case I have ever seen. In a few instances I have seen a diverticulum in the jejunum near the ligament of Treitz and occasionally diverticula of the jejunum below this.

DR. E. M. HAMMES (St. Paul) reported a case of tuberculous meningitis of over two months' duration with no evidence of meningitis during the course of the illness and in which the spinal fluid was normal throughout except for a decrease in the sugar.

#### DISCUSSION

DR. A. T. MANN: I would like to ask two questions: First, were the knee jerks equal on both sides, and, second, were there any miliary tubercles in the eye fundus?

DR. HAMMES: All reflexes were normal throughout at all times, except that both abdominal reflexes were absent.

As far as I was able to ascertain, examination of both fundi revealed no evidence of any miliary tubercles.

The meeting adjourned.

CARL B. DRAKE, M.D.,  
Secretary.

### IRON IN THE TREATMENT OF ANEMIA

In most cases of nutritional anemia and secondary anemia, and more or less in primary anemia, the administration of iron is of benefit. The administration of iron intravenously or subcutaneously is rarely necessary or desirable. Recent experiments with rats confirm previous work, that small doses of iron are sufficient to cause improvement. In a recent investigation it was found that the best hemoglobin improvement was caused by administering ferric acetate, ferric albuminate, ferric chloride and ferric citrate. (Jour. A. M. A., June 2, 1928, p. 1792.)

### PATENT MEDICINES IN MEXICO

The health department of Mexico has prohibited the sale of such "patent medicines" as "Wine of Cardui," "Peruna," "Tanlac," "Pinkham's Blood Purifier," "McCoy's Cod Liver Oil Tablets" and "Miles' Heart Tonic." The reason for this prohibition is thought to be the fact that the manufacturers are alleged to have failed to comply with the regulations recently put into effect by Mexico, requiring all "patent medicines" to publish a statement of their formulas on trade packages. (Jour. A. M. A., May 5, 1928, p. 1480.)

## PROGRESS

Abstracts to be submitted to Section Supervisors.

Members are urged to abstract valuable articles which they run across in their reading and send the abstracts to the physicians in charge of the respective sections. In order to avoid duplication it would be well to communicate with one of the section supervisors before the article is abstracted.

## SURGERY

### SUPERVISORS:

DONALD K. BACON,  
LOWRY BLDG., ST. PAUL

VERNE C. HUNT,  
MAYO CLINIC, ROCHESTER

**CANCER OF THE MALE URETHRA: A REPORT OF TWO CASES WITH A SHORT SURVEY OF THE SUBJECT:** John J. Robb (Brit. Jour. of Surg., April, 1928. Vol. XV, No. 60, pp. 605-611). Cancer of the male urethra is a very rare disease. No specimen of it exists in the museums of the Royal Colleges of Surgeons in London or Edinburgh. The disease usually occurs in the bulbous portion of the urethra, where it may arise in Cowper's Glands. In no case has the author been able to find a record or specimen of cancer of the urethra which originated in a stricture.

The first case is one of the more ordinary variety arising without apparent cause in the bulb of the urethra and running a rapidly fatal course. The examination revealed a densely hard mass in the perineum in the region of the bulb of the urethra, which terminated at the root of the penis by an abrupt craggy edge. This growth on excision proved to be a transitional cell carcinoma with evidence of rapid growth, infiltrating the deep tissues.

The second case was in a patient 59 years of age, who gave a history of having had gonorrhea at 21. At 53 years he experienced difficulty in passing urine. A stricture was diagnosed, and, during the next five years, bougies were passed on 111 occasions. Finally it became impossible to pass bougies, and an operation for excision of the stricture was performed. The microscopic examination showed scar tissue extensively infiltrated by transitional celled epithelioma involving the corpora cavernosa and the corpus spongiosum. The stricture was located at the peno-scrotal junction.

In the latter case 477 passages of instruments were made through the stricture. The part taken by chronic irritation in the production of cancer may be evidence in this case.

KENNETH MURRAY, M.D.

**RUPTURE OF THE URETHRA:** Hamilton Bailey (*Brit. Jour. of Surg.*, Vol. XV. pp. 370-384). The author quotes Boeckel's dictum, "Every rupture of the urethra, even the slightest, is a potential stricture." The cause of the injury is stereotyped, most often a fall astride a projecting object,—or infrequently a "kick in the crutch."

Four signs lead to a diagnosis of a ruptured bulbous urethra, viz., hemorrhage from the meatus, perineal hematoma, retention of urine, and pain. The magnitude of any one of these signs affords but little clue to the extent of the mucosal tear. Retention of urine is usually due to a reflex spasm of the compressor urethrae. When rupture above the compressor occurs, extravasation into the cellular tissues of the pelvis takes place early. The caudal catheter made to follow along the roof of the urethra is the best method of differentiating between complete and incomplete rupture.

For complete rupture of the urethra, without extravasation, the author favors the method of treatment suggested by Morison, which consists of a preliminary cystotomy, and then through a perineal incision suture the urethral roof with a few catgut stitches. No catheter is used; the perineal wound is lightly packed with gauze and left open. Fourteen days after operation one Lister's sound is gently introduced.

Intrapelvic rupture of the urethra is a more serious condition than the foregoing, and is nearly always associated with a fractured pelvis. Perineal swellings are not the rule. The condition is almost impossible to differentiate from extraperitoneal rupture of the bladder. The passage of a catheter and the withdrawal of a few ounces of extravasated urine from the space of Retzius may lead one to the erroneous conclusion that the catheter is in the bladder. A suprapubic incision opens the cave of Retzius; if the bladder is even moderately distended the lesion must be situated below the vesical sphincter. The immediate treatment is often limited to cystostomy and drainage. The author believes the only indication for the indwelling catheter is complete rupture of the intrapelvic portion of the urethra. Unlike the bulbous portion of the urethra, the membranous part shows but little tendency to stricture formation.

KENNETH MURRAY, M.D.

#### STANDARDIZATION OF EPHEDRINE PREPARATIONS

The A. M. A. Chemical Laboratory, in coöperation with the Council on Pharmacy and Chemistry, has been in considerable measure instrumental in arriving at the highly satisfactory condition that exists with regard to the market supply of this drug in America. The Laboratory studied the problem carefully and tests and standards were elaborated at the time when ephedrine and its compounds were just becoming popular. The standardization of new remedies is one of the most important functions of the Laboratory. Unless the products are standardized, comparable clinical investigations cannot be reported. The first step in the investigation by a therapist of a new remedy is the determination of its chemical composition and purity. (*Jour. A. M. A.*, June 9, 1928, p. 1873.)

## PEDIATRICS

### SUPERVISORS:

CHESTER A. STEWART,  
LA SALLE BLDG., MINNEAPOLIS

ROY N. ANDREWS,  
MANKATO CLINIC, MANKATO

**PREVENTION AND MODIFICATION OF MEASLES WITH ANTIMEASLES DIPLOCOCCUS GOAT SERUM:** Archibald L. Hoyne and Silber Peacock, M.D. (*Amer. Jour. of Diseases of Children*, June, 1928). Under any circumstances, measles is not merely a serious disease because of its possible complications, but one in which the mortality may be high, as shown by hospital reports. The advantage of providing immediate protection for an invalid child cannot be emphasized too strongly. The value of immune goat serum for purposes of this kind has been demonstrated. Human convalescent measles serum should be equally effective.

Tunnickliff's immune goat serum is of undoubted value as a prophylactic against measles when administered early and it may exert a modifying influence on the course of the disease if given at any time during the incubative period.

R. N. ANDREWS, M.D.

**PREVENTION OF POSTURAL DEFORMITIES:** J. Torrance Rugh, M.D. (*Arch. of Ped.*, June, 1928). Function promotes growth and development. Function determines the shape of a bone or part, and when this function is in any way hindered or interfered with, there will be induced a change in the form and structure of the bone to meet the needs of the altered function.

By reason of the position of the tibia over the astragalus, the proportion of body-weight is three-quarters upon the heel and one-quarter upon the ball of the foot. The higher the heel of the shoe, the more weight is placed upon the ball of the foot, which, of course, is not a weight-bearing part. In a very young child learning to walk, the first essential is muscle control.

The secret in the treatment of all potential deformities is prevention by the restoration of balance, and in order to recognize the presence of such potentialities, one must have an eye for symmetry and a knowledge of the normal.

Knee action is much less firm and secure when high heels are worn. This leads to tire and fatigue and in many cases to very faulty carriage of the body in the effort to maintain the erect posture over an unstable foundation.

If a child's back is symmetrical and straight, flexibility is the only quality to be tested. One of the safest rules is that a brace is an aid to an end and must be used as such. It should not hinder but should help. Mechanical devices will be of no assistance unless they fulfill two requirements: first, they must be so constructed as to furnish the desired support or fixation; and second, they must be accurately fitted to the part.

R. N. ANDREWS, M.D.

## EYE, EAR, NOSE AND THROAT

### SUPERVISORS:

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**CAUSES OF BLINDNESS IN CHILDREN.** Gordon Norrie (*Acta Ophthalmologica*. Vol. V. Fasc. 4). This study covers a period of twenty-five years in the Royal Danish Institutes for the Blind, and is based upon the records of 578 children, of which 348 were boys and 230 girls. Two large groups of conditions causing blindness are recognized, and each of these is further divided into smaller sections.

#### 1. Congenital Diseases

- a. Buphthalmus
- b. Microphthalmus
- c. Other Developmental Defects
- d. Retinitis Pigmentosa
- e. Cataracta Stratiformis
- f. Syphilis Congenita

#### 2. Diseases Occurring After Birth

- a. Destruction of the Cornea
- b. Iridocyclitis and Other Affections of the Inner Eye
- c. Atrophia Optica
- d. Lesions

Illegitimacy seems to be a factor, first, because of the frequency of gonorrheal ophthalmia, and second, because of the incidence of xerophthalmia, the latter being explained by the fact that these cases are often foster children whose hygienic and nursing conditions are very poor.

Congenital diseases causing blindness were found in almost one-third of the cases, 184 to be exact. Buphthalmus was found in 32 children and microphthalmus in 35; heredity played no part in these conditions, since no two cases were found in the same family. In complete atrophy of the eyes, however, retinitis pigmentosa and cataracta stratiformis, the influence of heredity was very definite. Thirty-two of the 578 cases had retinitis pigmentosa, and 41 had cataracta stratiformis. Congenital syphilis is not such a frequent cause of blindness as is thought; only 16 such cases were found.

The second large class of cases, consisting of diseases occurring after birth, numbered more than two-thirds of the entire series. Destruction of the cornea was found in 187 children, or about one-third of the total number. Of this group 49 were cases of blennorrhea neonatorum, but only five of these cases developed since 1912, when the use of silver nitrate solution became a law.

Scrofulosis as a cause of destruction of the cornea was found in 13 cases, none of which occurred since 1912. Norrie states of phlyctenular keratitis, which is often called scrofulous eye disease and which is often accompanied by skin sores on the face and scalp, as well as by glandular swelling, that it has nothing to do with scrofulosis but is due only to pediculosis capitis. The eye lesions appear and disappear with the lice.

In 88 children the corneal destruction took place within the first two years of life, and the basic disease in the great majority of these cases was xerophthalmia, due to lack of vitamin A. This was also the probable cause of blindness in 26 cases of serious infectious disease. Lack of whole milk in particular is the cause of xerophthalmia.

Iridocyclitis was the etiological factor in 32 cases, most of these being tuberculous and a few syphilitic.

The cases of optic atrophy form a large group totaling 138 children or about one-fourth of the entire number studied. The cause of the atrophy can not always be determined. Premature ossification of the skull was thought to be the reason for the atrophy in 27 children, and it is interesting to note that of this number 25 were boys and only 2 girls. In another group of 25 cases the atrophy was congenital, occasionally hereditary. Atrophy was due to meningitis in 37 children, and to brain tumor in 10. In the other cases no cause for the atrophy could be found.

Finally, lesions or traumatism were responsible for blindness in 236 children, of whom 23 had sympathetic ophthalmia which, therefore, could have been avoided if the offending eye had been removed in time.

So far as the prevention of blindness is concerned, in the case of hereditary congenital disease, limitation of offspring is advised although to no avail. Consanguinity is to be avoided, especially in families with retinitis pigmentosa.

Congenital syphilis must be combated by appropriate treatment of the mother during pregnancy and the child immediately after birth. Blennorrhea neonatorum should not exist if the eyes are properly treated at birth. So-called scrofulous diseases of the eye can be dispelled, the author states, by combating head lice. Xerophthalmia can be avoided by including the A vitamins of whole milk in the child's dietary. Cod liver oil is also efficacious. These may also be given during a serious infectious disease. Nothing can be done to prevent many of the intraocular diseases and optic nerve involvements.

If the inflammation in an injured eye (presumably perforated) has not disappeared in 6 weeks it should be removed, because of its almost certain lack of function and the great danger to the other eye. In some cases 6 weeks is too long to wait.

Only congenital diseases and optic atrophy should be frequent causes of blindness in the future. The present large number of corneal destructions should be greatly reduced.

VIRGIL J. SCHWARTZ, M.D.

## BOOK REVIEWS

Books listed here become the property of the Ramsey and Hennepin County Medical libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

### EPIDEMIC ENCEPHALITIS. Encephalo-Myelitis.

Leo M. Crafts, B.L., M.D. 237 pages. Cloth. \$3.50.  
Boston: The Gorham Press, 1927.

At last a Minnesota neurologist has written a book—something I have had in mind for a quarter of a century, but never accomplished.

The Gorham Press has recently published a most interesting volume on Epidemic Encephalitis by Dr. Leo M. Crafts, of Minneapolis. Most fittingly, he quotes the lines of Swinburne—

"At the door of life, by the gate of breath  
There are worse things waiting for men than death."

which happily describes the most serious of all the acute infections of the central nervous system.

Dr. Crafts' purpose is to present to the profession "in ordered sequence and comprehensive grouping, what has up to the present time been established as accepted knowledge on the character and behavior" of encephalitis. In this, he has happily succeeded. His chapter on history and definition is excellent. He commends the classification of Dr. Lewellys Barker, although all classifications, I believe, are as yet premature.

The chapters on "Symptoms" and "Diagnosis" are exceptionally good and are very informative. The photomicrographs enhance greatly the value of this little volume. His discussion of "Therapy" is an instructive résumé of the empirical treatment of epidemic encephalitis; nothing could more clearly emphasize our helplessness in this disease. Two drugs in this protein therapy are of outstanding value—namely acriflavine and sodium salicylate.

The selected cases drawn from the writer's personal clinical observations are most interesting and instructive and are a valuable addition to the text.

Dr. Crafts' book is unique in that it fills a long-felt want. The experienced neurologist can derive great benefit from its perusal. It is an accurate, concise and illuminative discussion of encephalitis which the medical student and general practitioner have hitherto so sadly needed.

C. EUGENE RIGGS, M.D.

### FOLKLORE OF THE TEETH. Leo Kanner, M.D. 316 pages. \$4.00. New York: The MacMillan Co., 1928.

Dr. Leo Kanner, a neighbor from Yankton, South Dakota, has here given us a simple but comprehensive compilation of data concerning folklore of the teeth, collected from all ages and races. Teeth have been so prominent and so necessary a part of the human body that they have attracted more than their share of superstition resulting in folklore. It is astonishing to us

to learn of the amount of superstition surrounding dentition, the position of the teeth and the disposal of deciduous teeth.

Practically all of us know that toothache is the most severe form of pain that we are called upon to bear but we may not realize that it has been so considered since the beginning of time. There is a story of a Turk who stopped by the side of a weeping child to offer help, but, when he found that she had been bitten by a snake, passed on, saying, "That's nothing. I thought you had the toothache." Countless remedies, both repulsive and ridiculous, charms, prayers and incantations were invented and resorted to for the cure of this formidable illness. Saint Apollonia was the patroness of toothache and many interesting legends center around the tortures she endured in having her teeth destroyed rather than give up her Christian faith.

One chapter is devoted to the artificial deformation of the teeth, including non-therapeutic removal, pointing, production of prongs and notches, amputation of crowns, artificial prognathism and coloring of teeth. Another chapter deals with popular dental hygiene and yet another with teeth used as tools, instruments, drugs, charms and jewelry. We learn that the toothpick belonged to prehistoric times and that the toothbrush is almost as old.

This book will hold much of interest to all of us who suffer from the presence or the absence of teeth, but it will, of course, have particular interest to the dental profession. It would be a profitable addition to the dentist's waiting room, for reading patients would soon decide that modern dental procedures are necessary, simple and comparatively painless.

MARGARET WARWICK, M.D.

### THE PREVENTION OF PREVENTABLE ORTHOPEDIC DEFECTS, WITH SPECIAL REFERENCE TO THE SPINE AND FEET. S. C. Woldenberg, B.Sc., M.D., M.Sc., Attending Orthopedist Post Graduate Hospital and Michael Reese Dispensary, Chicago., Ill. 120 pages. Illus. Cloth, \$2.00. Saint Paul: Bruce Publishing Co., 1927.

In the preface to this little volume the author condemns the indiscriminate use of open operations in the treatment of deformities of the bones and joints and is supported by Dr. Ridlon in this assertion. He gives a very terse résumé of the electrical modalities and emphasizes the dangers which result from their indiscriminate use by non-medical practitioners.

This volume is particularly interesting and valuable to the school physician in that it points out the prophylaxis, so far as possible, of orthopedic defects. Of unusual interest is the chapter on posture. The author attacks, in no uncertain terms, physical education as it is evolved in our public schools. Millions of dollars are spent annually in buildings, equipment and personnel in our public school system with decidedly mediocre results. The author urges members of the medical profession to interest themselves to bring this department under medical supervision for humanitarian reasons.

How pitiful has been and still is this department under non-medical direction. The very years when these deformities could be prevented are wasted by an altogether unscientific and irrational system of physical education.

Unusual advances have been made in the last few decades in regard to rickets and with this advance has come a new onus of responsibility on the shoulders of the medical profession. Focal infections and their sequelæ on the bony framework of the body also are considered at some length. Early diagnosis of tuberculosis of the spine and joints is of much importance in the prevention of deformities. A chapter on infantile paralysis emphasizes once again early diagnosis and institution of proper treatment. Considerable space is devoted to ailments of the feet and toes, most of which are preventable. In the words of the author, "The feet are the most faithful servants of the body and as a rule are treated the worst of all."

Volumes have been written on preventive medicine, but this is one of the few books on preventive orthopedic surgery. There is a definite field for many more such books as this one and the time will soon come when we shall have a more comprehensive volume on this particular subject.

W. A. SAWATZKY, M.D.

**STRABISMUS: ITS ETIOLOGY AND TREATMENT.** Oscar Wilkinson, A.M., M.D., D.Sc., Surgeon-in-Chief, Washington Eye and Ear Hospital, Washington, D. C. 240 pages. Illus. Cloth, \$10.00. St. Louis: C. V. Mosby Co., 1927.

The primary purpose of this book has been to stress the importance of early treatment to the public, the general practitioner and the ophthalmologist. The various theories with regard to etiology of strabismus have been fully discussed, as well as a general classification of the different types. Anatomy and physiology of eye muscles has been taken up in detail.

Treatment has been divided into non-operative and surgical.

Under non-operative treatment the author says that the most important and probably most neglected step is proper education. The old adages that a child can outgrow a strabismus or that later treatment is a simple one must be dealt with forcibly. This need for enlightenment is not only for the parents and teachers but also for the doctor; and no little blame is placed on the latter.

Next, the treatment is grouped under the following heads: (1) constitutional; (2) optical correction; (3) visual training; (4) development of binocular vision or fusion faculty.

Under operative treatment the first thing discussed is "When and Whom to Operate." The opinion of a dozen or more men is given, including Meller, Duane, Posey, etc., and they certainly are at great variance. The author favors early operation at almost any age *after* thorough and non-surgical treatment for one to six months has proven futile.

Various surgical procedures are well illustrated, including author's operations. Tendon tucking receives little praise. A great variety and more detail of the more recent progress in muscle surgery might not be amiss.

The book is well written, has numerous illustrations and a very good grade of paper has been used. It should stir every ophthalmologist to the need of more widely spread information on that very interesting subject of strabismus.

K. C. WOLD, M.D.

#### FISTULA OF THE ANUS AND RECTUM.

Charles J. Drueck, M.D., F.A.C.S., Professor of Rectal Diseases Post Graduate Hospital and Medical School, Chicago. With 66 Original Illustrations. 318 pp. Philadelphia: F. A. Davis Company, 1927.

It seems to be the thing today to present a monograph upon some special disease. The latest in rectal disease is one on "Fistula of the Anus and Rectum" by Charles J. Drueck of Chicago.

The book is well gotten up and is a good résumé of the subject. Chapter V is devoted to the tentative treatment of fistula. The author does not recommend this practice but it does not seem to me that he takes a definite enough stand against it. The percentage of cures from medical treatment is so small that it is scarcely worth attempting.

The chapter on the treatment of tuberculous fistula is not entirely in accord with my own ideas, as I believe the actual cautery is the method of choice. The book contains a great deal of worth-while information and may be read with profit by the proctologist, surgeon and general practitioner.

WALTER A. FANSLER, M.D.

**AMERICAN MEDICINE AND THE PEOPLE'S HEALTH.** An outline with statistical data on the organization of medicine in the United States with special reference to the adjustment of medical service to social and economic change. Harry H. Moore, Public Health Economist, United States Public Health Service; author of *Public Health in the United States*, etc., with an introduction by the Committee of Five of the Washington Conference on the economic factors affecting the organization of medicine. Cloth, 8 mo., 623 pages. Price, \$5.00. New York: D. Appleton & Co., 1928.

Every physician and layman who is interested in the adjustments of medical service to social and economic changes that are occurring should become conversant with this text.

Mr. Harry M. Moore, who is not a physician but a public health economist in the United States Health Service, has, I believe, given an impartial analysis of the present day organization of medicine. As an economist, Mr. Moore represents the fundamental interest of the public in securing the best possible medical service at the lowest cost; at the same time the inadequacy of compensation and unsatisfactory working

conditions of a large proportion of members of the medical profession are recorded in the text.

On all controversial questions the author presents both sides of the problem. Industrial medicine, status of the free clinic, the teaching dispensary, the pay clinic, group medicine, the individual practice of medicine are all studied; statistics often are given and trends indicated. Organized activities of the medical profession to promote better public relations are also recounted. The local committee on public relations might well study the methods given.

The author believes that the present situation appears to indicate that the following steps will next be taken:

(1) Additional hospitals and clinics will probably be established for persons of moderate means with the aid of the state when necessary.

(2) Preventive medicine will doubtless be greatly extended in private practice and public health work.

(3) Preliminary steps will be taken before long to make available health insurance to all the people, independently of medical service.

(4) Community surveys will be conducted for the purpose of providing a basis for the coordination of unit services into well balanced programs.

Every physician whether or not alarmed at certain trends of medicine today should be informed on the subject matter of this text so that private medicine may deserve and maintain its proper leadership in all those agencies which improve the health and happiness of the people of the United States.

C. A. McKINLAY, M.D.

NEW AND NON-OFFICIAL REMEDIES, 1928, containing descriptions of the articles which stand accepted by the Council on Pharmacy and Chemistry of the American Medical Association on Jan. 1, 1928. Cloth. Price, postpaid, \$1.50. Pp. 489, XLIX.

This book is the work of a distinguished organization, the Council on Pharmacy and Chemistry of the American Medical Association, which some twenty years ago was founded to clean out the Augean stables of proprietary medicines. The Council's plan was and has been the publication annually of a book containing descriptions of those unofficial preparations which after careful investigation have been found worthy of recognition and consideration by the medical profession. Such has been the devotion of the Council members, who serve without remuneration, and such the recognition achieved by their work that today the book describes all the new proprietary products which have a scientific base and which give promise of therapeutic usefulness. The physician who best safeguards his own interests as well as those of his patient will give no consideration to any proprietary medicinal agent which is not listed in *New and Non-official Remedies*.

The book is conveniently arranged for reference: each preparation is classified, and each classification is preceded by an authoritative and up to date discussion of the composition, actions, uses, and dosage of the medicament involved. Annually the book is carefully scrutinized and revised to insure its being in the fore-

front of medical progress. Products that have been admitted are reexamined at stated intervals to determine if they are keeping their promise of therapeutic usefulness; and new products are admitted as they are found acceptable.

Among the more important revisions this year are: the rewriting or recasting of the chapters on Medicinal Foods, Insulin, Arsenic Compounds, and Iron and Iron Compounds; revision of the chapters on Ovary and Parathyroid to make them conform to the results of recent research; and revision of the names and standards of the acriflavine dyes. A noteworthy omission is that of all parathyroid gland preparations designed for oral administration, their lack of efficacy by this route having been conclusively demonstrated.

The following are some of the products which have been recognized during the past year and which are now included in the book: Neonol, a new barbital compound; Mesurol, a bismuth preparation for use in the treatment of syphilis; Bromural, once omitted from the book, but now reinstated as a result of the manufacturer's limitation of the therapeutic claims; a number of standardized cod liver oils; Ephedrine, an alkaloid with epinephrine-like properties, and its hydrochloride and sulphate salts; Amidodoxyl benzoate, the ammonium salt of orthiodoxy-benzoic acid, proposed for the treatment of arthritis; Crotalus Antitoxin, an antsnakebite serum; several brands of erysipelas streptococcus antitoxin; and Anaërobic Antitoxin, and antitoxic serum for use against gas gangrene.

On account of the careful revisions and the current additions, *New and Non-official Remedies* is essentially a new book each year, indispensable to the physician who would keep up with the march of therapeutic progress.

#### CLINICAL GYNECOLOGY AND OBSTETRICS.

Rae Thornton LaVake, A.B., M.D., F.A.C.S., Assistant Professor of Obstetrics and Gynecology, University of Minnesota, etc. 281 pages with 35 illustrations. St. Louis: C. V. Mosby Co., 1928.

The value of a reference book to the student or to the clinician depends to a large degree on the purpose of the author in preparing the book. Dr. LaVake's purpose in writing this book is clearly set forth in the opening sentence of the preface. "This volume is designed for the student, graduate or undergraduate, who is organizing his knowledge of countless gynecologic and obstetric methods, facts, and opinions for purposes of practical application." Historic references, theories, hypotheses, tables, bibliographies—all the things with which the encyclopedic works of gynecology and obstetrics have necessarily been encumbered—have been deleted. Only those conditions are dealt with which are of practical importance and only those methods of treatment which are considered of greatest value at the present time have been described.

Perhaps the greatest value of the book is the constant emphasis on the close relation between gynecology and obstetrics. It has grown to be the custom to deal with these two subjects in separate text books as though there were no relation between them. This has led

to a divorcing of obstetrics and gynecology so that obstetrics is most often thought of as mere midwifery and gynecology is most often considered as a branch of surgery. There is a tendency in Great Britain to combine the two and to deal with them in the same volume. Dr. LaVake's book is the first of American books in recent years to so combine the two subjects and to insist on their inter-relation.

Each of the thirty-five chapters deals with a special condition briefly, concisely and in a direct manner. The style of writing is pleasing and forceful. One feels as he reads the book that Dr. LaVake is talking directly to him. This is made effective through the frequent use of the word "you." Lengthy descriptions of the many and various ways of treatment of different conditions is avoided by the author, who presents only those methods that in his experience "have stood the test of time and proved themselves to be the most efficient." While this exposition tends to limit the variety of treatment it is undoubtedly true that one method of therapy consistently pursued will in a vast majority of cases bring better results than sporadic treatment by several methods.

This one small volume is not intended to replace the larger reference works on obstetrics and gynecology but to supplement and to correlate them. The author has accomplished this end and the book will be found to be a worthy addition to the subject.

LEE M. MILES, M.D.

**WHAT YOU SHOULD KNOW ABOUT HEART DISEASE.** Harold E. Pardee, M.D., Assistant Professor of Clinical Medicine, Cornell University Medical School; Assistant Attending Physician, New York Hospital, etc. 120 pages. Price, \$1.50. Philadelphia: Lea & Febiger, 1928.

Dr. Pardee has attempted in this book to do for the cardiac patient what Dr. Joslin and others have done for the diabetic and Dr. Brown for the tuberculous patient—to provide a brief manual of instruction and advice which may enable the intelligent reader suffering from heart disease to understand his disease and to regulate his life in accordance with established principles of treatment.

Such a book will relieve the busy physicians who all too often neglect the education of cardiac patients in matters of daily routine; it will also relieve the cardiac patient who oftentimes forgets or fails to ask of a doctor, obviously pressed for time, innumerable questions concerning his condition. The book deals with the anatomy and physiology of the heart in simple language. It discusses the pathology of various heart afflictions and explains the symptoms produced. There is an admirable discussion of treatment, admirable because it is not too specific but deals in generalities, and because it points out some of the difficulties which the doctor may have in obtaining the expected results. Instructions are not specific enough to permit the patient to attempt regulation of his own treatment.

Sections are devoted to diet with simple tables for reduction of obesity and of salt-free food. Chapters

on the relationship of the cardiac patient to occupations, marriage, pregnancy and surgery are well considered and contain common sense.

The book is small, well printed and easily read. The author has avoided the pitfalls surrounding such an attempt by speaking in non-technical language, by emphasizing the importance of coöperation with the physician and by omitting those facts which should not become common knowledge. Errors in syntax and grammar are not always omitted, which makes the treatise thoroughly American. I believe this work can fill a long-felt want in the field of cardiology.

NORMAN JOHNSON, M.D.

**ANNUAL REPRINT OF THE REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR 1927.** Cloth. Price, postpaid, \$1.00. Pp. 103. Chicago: American Medical Association, 1928.

The Council on Pharmacy and Chemistry of the American Medical Association annually publishes the reports which tell the reasons for non-acceptance of those products which during the year it has found unworthy of recognition. Some of these reports have been published in abstract in *The Journal*; all are contained in full in the volume which is the subject of the present review. The physician who has learned to ask the manufacturer's "detail" man, "If it is not in New and Non-official Remedies, why is it not?" will find here the answer which that personage will no doubt hesitate to give him. The book shows the practical working out of the principles which the Council's experience has shown to be essential in its fight for rationality in the field of proprietary medicines.

Among the products reported as unacceptable are: Bismogenol, which is bismuth salicylate under a fancy name; Desitin, a complex mixture from Germany; Hexol, a pine oil preparation for which unwarranted claims are made; Warnik's Advocaat, a mixture of potassium arsenite and alcohol in the form of an egg nog marketed without emphasis of the arsenic content in a way likely to lead to harmful and ill advised use by the public; and Solvo Aspirin, another futile attempt to market a solution containing acetyl-salicylic acid rendered soluble by addition of sodium bicarbonate.

A glance at the index shows, however, that these reports do not always deal with articles that have been actually rejected by the Council. Preliminary reports are frequently made on new products which appear promising but for which there is not yet sufficient evidence to warrant inclusion in New and Non-official Remedies. Included in the group this year are: a report on Blueberry Leaf Extract, which gives promise of being useful in the treatment of diabetes; a report on "Plasmoquin," a substitute for quinine in the treatment of malaria brought out in Germany but thus far withheld from the market by the American agent; a report on "Alpha-Lobeline," which has been the subject of many conflicting estimates but which lacks conclusive evidence demonstrating its usefulness; two reports on Ephedrine, announcing standards, evaluating therapeutic usefulness,

and finally announcing the acceptability of the drug and of two of its salts; a report on Bismarsen, a new derivative of arsphenamine containing bismuth and proposed for use in the treatment of syphilis.

Of much current interest is the reprint of the report of Dr. R. A. Hatcher reviewing the literature on the Gwathmey method of colonic anesthesia and evaluating the present standing and usefulness of this method. This report is an outstanding example of the way in which the Council in addition to its other activities aims to contribute to the advance of general medical knowledge.

**X-RAY AND RADIUM IN THE TREATMENT OF DISEASES OF THE SKIN.** George M. MacKee, M.D. 2nd ed., 788 pages. Illus. Cloth, \$10.00. Philadelphia: Lea & Febiger, 1927.

The second edition of MacKee's valuable volume is a great improvement on the excellent first edition. All subjects have been amplified, and the illustrations cannot be surpassed.

The book should be in the hands of every dermatologist and every physician who uses or refers patients for roentgen treatment.

HENRY E. MICHELSON, M.D.

**WANTED**—Salaried appointments for Class A Physicians in all branches of the medical profession. Let us put you in touch with the best man for your opening. Our nation-wide connections enable us to give superior service. Aznoe's National Physicians' Exchange, 30 North Michigan Ave., Chicago. Established 1896. Member The Chicago Association of Commerce.

**WANTED**—A good, young physician; permanent position with a manufacturing concern; good salary; short hours. Address C-188, care MINNESOTA MEDICINE.

**POSITION DESIRED** as assistant in doctor's or dentist's office in Twin Cities by young lady with hospital training. Good references. Address C-187, care MINNESOTA MEDICINE.

**POSITION WANTED** in doctor's office in Twin Cities by graduate nurse with several years' laboratory experience. Address C-191, care MINNESOTA MEDICINE.

**HAVE EXCELLENT LOCATION** for physician in South-Central district, Minneapolis. New building in fine locality. See A. W. Scherven, 3763 Bloomington Avenue South, Minneapolis or telephone Drexel 2248.

**FOR SALE**—Luxor model Alpine lamp in very good condition. \$225.00. Call Dr. Jones, Atlantic 5936—808 La Salle Building, Minneapolis.

**FOR SALE**—Large general practice in good farming community in Central Minnesota. Population 3,000. Practice has averaged \$10,000 a year for last 5 years. Equipment is complete with diathermy and quartz light. Reason for sale—going on fellowship October 1. Address C-185, care MINNESOTA MEDICINE.

**FOR SALE**—A \$9,000 yearly general practice in good town of 1,350 in North Dakota. Large territory; good collections; no competition. Exceptional opportunity to make money right from the start. Practice and equipment for sale. No real estate or property. Very liberal terms. Advertisement appears but once. Address C-190, care MINNESOTA MEDICINE.

**WANTED**—Locum tenens or assistantship by experienced physician, licensed in Minnesota. Address C-186, care MINNESOTA MEDICINE.

**DESIRABLE OFFICE SPACE** to share with another physician or dentist in Hamm Building, Saint Paul. Address C-189, care MINNESOTA MEDICINE.

**FOR RENT**—Physician's and surgeon's office, new, modern building, 3805½ Nicollet Avenue, Minneapolis. Busy corner. Waiting room in common with established dentist. Rent reasonable. Apartment available in conjunction. Drs. Gerde and Bruss, 608 Besse Bldg., Minneapolis.

# MINNESOTA MEDICINE

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## STUDIES ON BIOLOGICAL AND MEDICAL ASPECTS OF "SWIMMER'S" ITCH\*

SCHISTOSOME DERMATITIS IN MINNESOTA

REED O. CHRISTENSON and W. P. GREENE

*Minneapolis*

FOR a number of years there has been reported from several lake regions in Minnesota a peculiar type of skin eruption locally called "swimmer's" itch. The etiology of this infection was unknown. Some physicians held that it was due to scabies; others thought that the causative organism was to be found in a green alga which occurs in the lakes in the summer to such an extent that the water is often colored by its presence. Other possible explanations have been given as to its etiology, none of which has been satisfactory. Among the inhabitants of these summer resorts the infection has incited considerable worry, and in many instances the imagination has led to distorted views regarding its nature and pathologic significance. It is the purpose of this paper to discuss the cause of swimmer's itch, and to give some experimental data concerning it.

Cort (1928), reporting on his work of the previous summer at the University of Michigan Biological Station at Douglas Lake, Michigan, noticed an itching on his wrist while removing a number of snails from a bucket. Repeated dipping of the hand into the water produced a typical case of the itch on his wrist. In the case of a typical life history the schistosomes, or blood flukes, in the larval stage, enter their hosts actively through the skin. Here they migrate into the blood stream, where they mature, copulate, and deposit their eggs. The eggs are spined and shortly make their way from the blood to the outside in the body discharges of the host.

In the eggs are found small ciliated embryos, or miracidia, which hatch and swim about. These embryos are attracted by several species of freshwater snails. They penetrate the body of these and develop into sporocysts and daughter sporocysts, the latter migrating to the liver. In these sporocysts enormous numbers of cercariae, or infective larvae, develop, and soon pass to the outside, where they are ready to enter a new host to continue the life cycle. Since the penetration of the new host is active it was suspected by Cort that this was the cause of the itch. He isolated the snails according to species and found that large numbers of these schistosome larvae were issuing from three of them. The larvae were identified as belonging to the species *Cercaria elvæ* Miller, 1923. Experimental application of them to the skin of seven students produced a dermatitis in five cases. Two of the students were not infected after repeated attempts, signifying different degrees of susceptibility. The explanation was that a non-human schistosome cercaria will penetrate the skin of man if the opportunity is offered. There is no evidence, however, that it enters the blood stream or will develop to maturity in the blood of man, but possibly develops in the blood of some one of the mammals associated with the aquatic environment. Cort gives to this type of infection the name "Schistosome Dermatitis."

At the suggestion of Professor W. A. Riley, Head of the Department of Zoology, and with the coöperation of the Division of Preventable Diseases of the State Board of Health, a study was made of the Minnesota situation. Snails were collected from several lakes in the vicinity of the Twin Cities, including those from which

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complaints were made, and were assorted according to species. They were then placed in culture dishes filled with filtered pond water. Three types of furcocercous, or forked-tailed, cercariæ were found issuing from the snails. One of these, coming from specimens of the large pond snail, *Lymnaea stagnalis* var. *oppressa*, was *Cercaria elvæ*, the causative organism of schistosome

At this magnification the spines do not show. Figure 2 shows the snail, its host.

To demonstrate the ability of this organism to produce the follicular dermatitis called "swimmer's" itch, which is rightly called "Schistosome Dermatitis" after Cort, some of them were held in a watch-glass against the calf of the leg. As the water dried a slight itching was felt, fol-

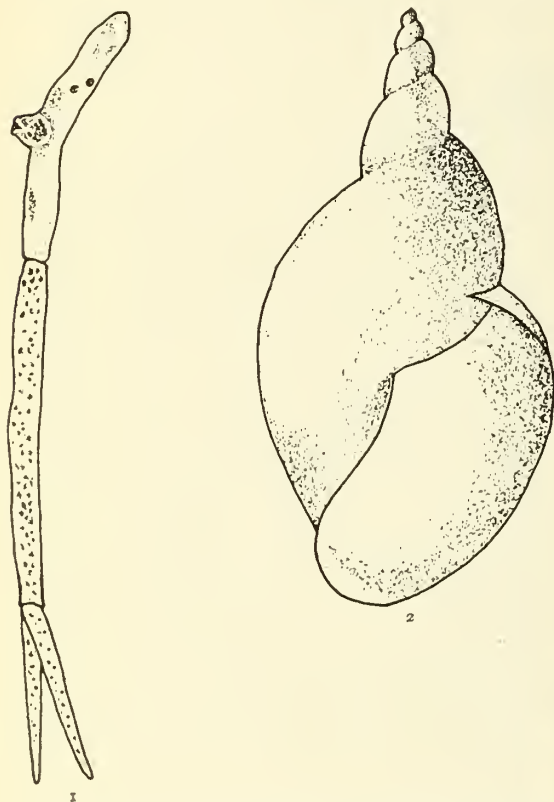


Fig. 1. Cercaria elvæ, the cause of schistosome dermatitis, or the so-called "swimmer's" itch. Enlarged 100X.

Fig. 2. The fresh-water pond snail, *Lymnaea stagnalis* var. *oppressa*, in which *Cercaria elvæ* develops. Enlarged 2X.

dermatitis. Infected specimens of this snail were isolated in a separate culture dish and the cercariæ issuing from them used in the experimental work. Four of the 123 snails examined from the three lakes where infection had been reported were infected with this species of cercaria. A fifth infected snail was opened at one of the lakes and studied microscopically. All of the developmental stages of the cercaria were recovered. Figure 1 shows *Cercaria elvæ*, with its protruding sucker, dark pigment spots immediately in front of it, and the typical forked tail. The entire organism is finely and evenly spined, which aids in its entrance into the hair follicles.



Fig. 3. An experimental infection of schistosome dermatitis produced in the laboratory by the application of schistosome cercariæ to the skin.

lowed by intense itching the following day, and a typical case of schistosome dermatitis in the infected region. The infection was identical to the natural one experienced previously while wading to collect snails. Subsequent wading for more snails produced a second natural infection of considerable extent. A second application of cercariæ to the skin produced new papules and swellings, with pustules forming on the second day. A heavy-set infection resulted when a member of the State Board of Health placed his elbow in the culture dish for a short time. Typical papules appeared, disappeared, and reappeared as shown in Figure 3. Little discomfort was felt due to this experiment, quite con-

trary to those tried earlier. The localized infection shows the extent of the immersion of his arm into the culture dish. Larvæ applied to the arms of three graduate students of the Zoology Department gave negative results in two cases, and produced an itching and small red papules in the third. These were treated to prevent infection and soon disappeared.

To check the possibility of some other agency being in the water causing the infection, the water without the schistosome cercariæ was applied very liberally to the skin. In no case was there an eruption of any kind, while portions of the same water containing cercariæ produced infection.

#### NOTES BY EPIDEMIOLOGIST

During the first week of July, 1928, five complaints regarding "swimmer's" itch involving four small lakes in the vicinity of the Twin Cities were received by the Division of Preventable Diseases, State Board of Health. Investigation of the cases which occurred in two scout camps and two swimming resorts located on these lakes were made.

At one of the beaches the proprietor stated that he had had complaints every summer for the past twenty years. At the girl scout camp, thirty of seventy girls had been attacked. Prac-

tically all of the 100 boys at the boys' camp had been attacked. In two cases a diagnosis of scabies had been made by the family physician. Algæ in the water and sand fleas were thought by some to be causes.

Seven bathers with lesions were seen. They complained bitterly of an intolerable itching and burning wherever lesions were present. New lesions appeared after each swim. The papular lesions, wheal-like, resembling those from mosquito bites, were numerous over the hairy surface of the body except the head. Each lesion surrounded a hair follicle which is the usual point of entry of the cercaria. A few lesions were capped with dead epidermis which looked like dried small vesicles. The lesions were in various stages of healing. Crusts and a few small pustules were found which appeared to have resulted from scratching.

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## PROSTATIC BACKACHE AS A CAUSE OF PROLONGED DISABILITY FOLLOWING INJURY

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RECENT improvements of the x-ray as an aid to diagnosis now enable us to definitely recognize and thus prove or disprove spinal fractures and bone disease. However, with our present workmen's compensation laws, prolonged disability following comparatively trivial back injury, without adequate objective findings to account for the complaints, seems to be a rather common occurrence.

This condition has lent favor to such diagnoses as "neurasthenia," or "rheumatic condition," and "neuritis," the basis for which is usually explained in probable focal infections. It is often found that focal infections are at the bottom of these complaints, and the trouble may be located in teeth, tonsils, or sinuses. Sometimes even an appendix or a gallbladder is sacrificed in the search, but one spot in the anatomy that seems to have been generally overlooked is the prostate.

Chronic prostatitis is a very common disease and one easily diagnosed. To a varying extent, with it is associated a certain degree of seminal vesiculitis. There are no available statistics in the literature on the relative incidence of prostatic disease. Pugh<sup>1</sup> remarks: "A vast army of data shows that all men have had or are going to have a pathological condition of this gland. It may assume one of several forms. Deducting 30 per cent who probably have a true prostatic hypertrophy, we still are left with about 60 per cent available for a chronic prostatitis." This view seems rather extreme.

It is a widespread belief that prostatitis and seminal vesiculitis are venereal in origin. In the chronic form, it has been shown that if the specific organism had been the exciting cause, the secondary invader has kept the gland pathological, and in its presence the gonococci have become extinct. Numerous investigations on the bacteriology of the gland in chronic prostatitis<sup>2,3,4</sup> have found the *Bacillus Coli* and the *Staphylococcus Albus* to be the chief offenders, but in an equal percentage of cases cultures from the expressed secretion have been sterile. Noyes and DuRupt<sup>5</sup> claim to have found gram negative

diplococci in 89 per cent of their cases of chronic prostatitis; in view of this high percentage it seems likely that these diplococci were not the actual organisms described by Neisser. Pugh<sup>6</sup> states: "A great army of prostatics whom we have investigated showed a gonorrheal origin in 100 per cent." He suggests that the guilt for continued prostatitis cannot be fixed on any one organism, but that the gonococcus is undoubtedly the exciting cause in 90 per cent of cases. Young, Geraghty, and Stevens<sup>7</sup> have called 25 per cent non-venereal.

Wesson<sup>8</sup> proposes that "prolonged ungratified sexual desires, excessive physiological or abnormal sexual indulgences, with the attending engorged condition, is an important etiological factor in all non-gonorrheal and most gonorrheal prostatitis cases. Sexual perversions, the practice of coitus interruptus, excessive masturbation, or the frequent indulgence in the popular petting parties of the day, are of more importance than the gonorrheal infections as causes of prostatitis. In rare instances, chronic prostatitis and seminal vesiculitis occur as a complications of general septicemia and other infectious diseases, and it may follow local trauma such as repeated vigorous prostatic massage, bicycle riding, or habitual sitting on cold marble steps."

Bugbee<sup>9</sup> has reported five cases of influenza causing prostatitis. Shea<sup>10</sup> and also Smith and Morrissey<sup>11</sup> have called attention to dental infection as an etiological factor.

It is important to bear in mind that chronic infectious pathology in the prostate may be entirely symptomless. Walther<sup>12</sup> emphasizes the fact that the size of the organ must be totally ignored, inasmuch as chronic disease may exist without any objective findings of hypertrophy.

The clues which should lead one to suspect the prostate as a seat of a pathological process in absence of a history of a urethritis, or such a significant sign as a persistent urethral discharge, are the pains or abnormal sensations of various sorts which seem to be such frequent concomitants of disease in this gland. The innervation of

the prostate is entirely sympathetic or parasympathetic. Head and others<sup>13</sup> have shown that the fibers of the tenth dorsal to the third sacral segments are concerned in this innervation, and thus it is possible for pain from prostatitis or seminal vesiculitis to be referred to regions innervated by any of the corresponding spinal nerves.

The most frequent of these neurological manifestations of prostatic and vesicle disease is expressed by pain in the back. Based on 100 consecutive histories of prostatitis, Pugh<sup>14</sup> reports backache and lumbar pain in 90 per cent of the cases, itching and perineal pain in 83 per cent, and testicular pain in 23 per cent. In 358 cases of prostatitis, Young, Geraghty, and Stevens<sup>15</sup> found the following referred pains:

	Cases
In the back (low lumbar)	64
right side	5
Over the kidney region, left side	1
both sides	2
right side	6
Simulating renal colic, left side	2
not stated	2
Suprapubic	22
In neck of bladder	4
In penis or urethra	14
In groin (one or both)	18
In testicle (one or both)	18
Over sacrum	5
In buttocks	2
In hips (one or both)	10
In thighs	12
In the knee (one or both)	4
Simulating sciatica	5
In perineum	35
In rectum	13

It is this low lumbar type of pain, the basis of which is unrecognized, which is so frequently the cause of prolonged disability after minor back injury. The accompanying series of case histories illustrate this condition.

#### CASE REPORTS

CASE 1.—Aged 26.

*Chief Complaint.*—Pain in left hip and low in back, sometimes goes down the thigh.

*History.*—While lifting a speeder on to a track two months ago, he slipped on the icy ground and fell on his left hip. He continued to work for one week and then consulted a doctor, because the pain had grown worse and he was unable to work. He was x-rayed, with negative findings. He then received diathermy,

was given injections and finally a sacro-iliac belt. The doctor told him that his sciatic nerve was probably injured. He is only "slightly better."

*Examination.*—Prostate slightly enlarged, nodular, and moderately tender. Expression shows pus cells in clumps. Venereal disease denied. General physical examination otherwise negative. Tonsils out; teeth in good condition.

*Treatment and Course.*—Referred back to local M. D. for treatment.

CASE 2.—Aged 43.

*Chief Complaint.*—Steady pain low in back.

*History.*—He was carrying a wooden concrete form three months ago and slipped and fell backward to a sitting position. The form struck him in the left testicle and in the perineum; he also strained his back. He walked a distance of about two blocks to camp, laid in bed until the next day and then rode a distance of sixty miles by train to a doctor. He had not been able to urinate so was catheterized. He was treated thereafter with hot packs and liniment, but did not improve and eventually changed doctors. Today he has a steady pain low in his back, which has been severe enough to disable him.

*Examination.*—Left lobe of prostate and adjacent seminal vesicle moderately swollen, boggy and exquisitely tender. Expression loaded with pus. No additional significant findings to general physical examination. When using the leg-raising tests, he complained of pain in his back but did not localize it. Venereal disease denied.

*Treatment and Course.*—Referred back to local M. D. for treatment.

CASE 3.—Aged 23.

*Chief Complaint.*—Pain in the left hip going through to the left testicle.

*History.*—Five days ago he was lifting a door and slipped on the ice and fell, straining his back. He was only a little stiff afterward and he continued to work. The night after the injury, he began to have a severe pain in his left hip which seemed to go through to the left testicle. This has grown progressively worse and he has been unable to work for the past four days.

*Examination.*—Prostate swollen moderately, boggy, and extremely tender. Tenderness over seminal vesicles. Expression loaded with pus cells. Venereal disease denied. General physical examination otherwise negative. Tonsils out; teeth in fair state of repair.

*Treatment and Course.*—Marked relief after first massage. Sitz baths ordered; complete symptomatic relief after third message. Patient did not return for further check-up.

CASE 4.—Aged 32.

*Chief Complaint.*—Pain in the small of the back.

*History.*—About six weeks ago, he fell a distance of about six feet, lighting on his right buttock on a timber. Aside from tenderness at the site of the trauma, a pain developed in the small of his back. He thinks that he hurt his back in the fall. This pain is worse on bending and is severe when he gets out of bed in the morning; it is constantly present.

*Examination.*—Acutely tender, moderately enlarged,

nodular prostate. Tenderness over the seminal vesicles. Venereal disease denied. Hypertrophied tonsils. No additional physical findings of significance.

*Treatment and Course.*—Referred back to local M. D. for treatment.

CASE 5.—Aged 34.

*Chief Complaint.*—Dull ache in middle of small of back and across left buttock.

*History.*—He fell a distance of five feet, striking his left forearm, left loin and left hip on the arm of a seat, which broke from the blow. He was not incapacitated at the time and continued to work. During the following eleven months he had to lay off a few days each month on account of pain low in his back. He believes that this pain was due to his injury. Finally, his back got so bad that he had to quit work. His doctors gave him some medicine, manipulated his back under ether and put him in a cast for one week, then put a brace on the back. His pain has continued and he has not worked for the past six months. History of gonorrhea seven years ago, which took two or three years to get cleared up.

*Examination.*—Right lobe of prostate enlarged, boggy, tender. The left lobe is smaller but is extremely tender. Expression shows pus in clumps. No gonococci found. Right tonsil hypertrophied, with evidence of chronic infection. On straight leg-raising tests he complains of pain down the back of his legs. General physical examination otherwise negative.

*Treatment and Course.*—Referred back to local M. D. for treatment.

CASE 6.—Aged 47.

*Chief Complaint.*—Burning pain in the left testicle and up the center of the penis.

*History.*—About six weeks ago, he "strained" himself when he had hold of a grab iron on the top of a car and the train jerked forward, but he did not lose his grip. As soon as he had climbed down to the ground, he felt a pain in his groin and on the inside of his left thigh. He continued to work for the next two weeks, but the pain persisted, especially in the left testicle. Finally he had to quit work and has been disabled for the past four weeks, during which time he has received light treatments and has had to wear a suspensory continuously.

*Examination.*—Extreme tenderness over the left lobe of the prostate and the adjacent seminal vesicle. Right lobe only slightly tender, but is enlarged and nodular. Left testicle slightly larger than the right and tender at its upper pole. The cord is tender near the testicle and the vas feels thickened. Pus cells in large number in the expressed secretion. Venereal disease denied. General physical examination otherwise negative.

*Treatment and Course.*—Symptomatic improvement with first massage. Referred back to local M. D. for subsequent care.

CASE 7.—Aged 40.

*Chief Complaint.*—Pain in right loin.

*History.*—While using a jack two days ago, the handle slipped and he fell forward, bumping his right elbow and straining his back.

*Examination.*—Right lobe of the prostate tender without enlargement. Pus cells in large numbers in the ex-

pressed secretion. Venereal disease denied. General physical examination otherwise negative.

*Treatment and Course.*—Marked symptomatic relief after first massage. Sitz baths advised. Did not return for three weeks because he had so much relief after the first massage. Complains now of pain in the right side going through to back, and in right groin. Right lobe of prostate now enlarged, tender. Massaged. Did not return.

CASE 8.—Aged 37.

*Chief Complaint.*—Pain in left side of back.

*History.*—Woke up with a "catch" in his back low on the left side, and felt a pain in this region when he moved. Had been doing heavy lifting the day before and thinks he strained his back.

*Examination.*—Left lobe of prostate boggy, not enlarged, but acutely tender. Pus in expression. Venereal disease denied. General physical examination otherwise negative.

*Treatment and Course.*—Massaged. He said that he felt better after the first massage. Sitz baths advised twice daily. Did not return for subsequent treatment.

CASE 9.—Aged 39.

*Chief Complaint.*—Dull pain in small of back.

*History.*—Slipped and fell backward, striking the small of his back against a seat box on a locomotive. No immediate discomfort although he felt somewhat numb in his back. Several hours later his back began to pain him, and he also had developed a pain in his right shoulder.

*Examination.*—Right lobe of prostate and right seminal vesicle tender. Prostate moderately enlarged and boggy. Pus in expression. Venereal disease denied. No additional significant physical findings on general examination.

*Treatment and Course.*—Complete symptomatic relief after first massage. Advised to take Sitz baths. Did not return for further treatment.

CASE 10.—Aged 49.

*Chief Complaint.*—Lame back since injury six years ago.

*History.*—In 1922 his abdomen and back were squeezed diagonally between an engine truck and piston head. He was not disabled but his back has never been the same since. When he gets very tired, a lameness in his back, which has been continually present since injury, gets worse and becomes a pain. At times he also has a dull ache in his left hip. Relieved by rest. Gonorrhea twenty years ago.

*Examination.*—Prostate generally irregular, nodular, tender. No enlargement. Pus in expressed secretion. No gonococci. General physical examination otherwise negative.

*Treatment and Course.*—After second massage, he became symptom-free for the first time in five years. Massage continued, combined with Sitz baths until the tenderness had disappeared from his prostate, and the expression was practically free of pus.

That these cases represent a condition not infrequent in occurrence is evident from the fact that they have all been seen within the past twenty-four months in the consultations of one

surgeon, Dr. R. C. Webb,<sup>16</sup> with whom I have examined the majority of the patients. In this series, nine illustrate typical prostatic backache; one other case is included as an example of pain referred elsewhere. Within the same period of time, we examined five other cases in which the prostate was found to be a focus of infection related to disease at some other point in the body.

The exact sequence of events following injury by which previously existing prostatic infection becomes manifest must of course be somewhat speculative. In the majority of conditions in which the prostate is the cause of the symptoms, the condition is probably one of referred pain, due to lack of drainage of the gland, combined with a varying degree of fibrositis. It seems reasonable to expect that, following local trauma in the form of strain or contusion of the back muscles, a certain amount of fibrositis follows. In this latter state, metastatic infection may also take place, with the prostate as the focus. More rarely there may be an arthritis of the lumbosacral spine. In any of these conditions the static element enters and due to the attitude which the patient must assume in standing or walking, which increases muscular back strain, the patient experiences pain in the muscles or ligaments of his back.

Methods of treatment are not within the purpose of this paper. These are discussed in the texts on urology and include massage, the instillation of antiseptics, the use of vaccines, local application of heat, and in selected cases mechanical dilatation of the prostatic urethra for better drainage. Most of the cases herewith reported were referred for diagnosis only, some from remote points. Unfortunately we have no detailed follow-up on them. Ideally, a case should be under treatment until the expression gives no microscopic evidence of infection. It is somewhat characteristic of the type of person that these particular cases represent, that following symptomatic relief the effort to get to the doctor's office is not worth making. We were convinced, however, that the prostatic disease in each case was the important factor in the subjective complaints.

#### SUMMARY

1. The prostate as a focus of infection is probably of much greater incidence than is generally realized.

2. Chronic prostatitis is an important cause of backache.

3. Rectal examination is important in every general physical examination, and if there should be any suggestion of the possibility of a focus of infection somewhere in the body, microscopic investigation of the prostatic and seminal vesicle expression is imperative.

4. Absence of objective enlargement to digital examination, or of symptoms, does not exclude the prostate as a seat infection.

5. No orthopedic procedure is justifiable in back injuries with obscure objective findings as long as the prostate gives evidence of infection.

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## DIABETIC ACIDOSIS: AN ETIOLOGIC FACTOR IN THE PRODUCTION OF AURICULAR FIBRILLATION\*

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THE recent observation of a patient, the victim of a number of attacks of diabetic acidosis and coma, in whom the last two attacks were accompanied by auricular fibrillation, has called our attention to the myocardial damage, probably toxic in nature, which occurs in this condition. The infrequency of acidosis as a cause of the cardiac arrhythmias is emphasized by the scarcity of reference in the literature to diabetes or acidosis in any form as an etiologic factor in their production. It seems therefore advisable to report observations on this case indicative of the etiologic relation of the acidosis to auricular fibrillation and to the ensuing myocardial insufficiency, with apologies for the incompleteness of data, due chiefly to lack of cooperation of the patient.

Mrs. H. M., aged 35, white, had always been well, except for a chronic appendicitis and cholecystitis relieved by operation in 1912, until May, 1925, when she noted the onset of the classical symptoms of diabetes. No treatment was sought at that time and the patient became gradually worse until she was admitted to Ancker Hospital, Saint Paul, in September, 1925, in marked diabetic acidosis (flushed cheeks, dry tongue, air hunger and blood sugar .85 per cent). The heart at this time was not enlarged and there were no murmurs or irregularities, but the tones were weak and indistinct, the rate about 140 per minute. Within twenty-four hours after receiving 90 units of insulin plus the usual symptomatic treatment, the patient emerged from her coma, the blood sugar decreasing to 0.1 per cent in three days. Convalescence was uneventful, except that the tolerance was shown to be considerably below the basal caloric requirements, and the patient was discharged with the urine sugar-free, subject to a dosage of 45 units of insulin daily. Being careless about her management, she was readmitted in January, 1926, in severe acidosis following a respiratory infection, with a blood sugar of 0.84 per cent. There were no changes in the cardiac findings at this time. She promptly recovered under treatment as before and was discharged with the same insulin dosage.

Similar interval neglect was practiced, and in March, 1926, she was admitted to Bethesda Hospital, Saint Paul, in acidosis and coma following an acute pharyngitis. On this admission she had a persistent soft blowing systolic murmur heard best over the apex, trans-

mitted over the precordium. An abscessed tooth was removed. Eye grounds were negative.

The same careless regime characterized the next interval, which was followed by a relapse into coma following an acute enteritis. When seen at home this time she showed a typical picture of acidosis, but now for the first time the heart tones were much weaker than on previous examinations, and auricular fibrillation was found to be present. Knowing the large amounts of insulin required, she was given 100 units and sent into the hospital, where she was seen about two hours later, her breathing markedly improved, her mental state cleared, and with much better heart tones and a normal rhythm. No digitalis had been given.

Insulin at frequent intervals was necessary to keep the acidosis under control. After forty-eight hours the night dose of insulin was omitted, whereupon, after twelve hours without the drug, she suddenly went into coma again, with a return of the fibrillation, both of which were relieved by the usual heavy doses of insulin. The heart rate remained rapid and the tones were very sharp, suggesting the driven heart of an acute infection, with a loud apical systolic murmur transmitted over the precordium. Slow but steady improvement followed the institution of a diabetic regime with 45 minims of the tincture of digitalis daily, the tones becoming more dull and broad.

Following this attack, however, she continuously showed signs of myocardial insufficiency with dyspnea and marked edema of the legs, associated with a negligence of treatment. The x-ray of the heart showed a transverse diameter of 12.4 cm., being 45 per cent of the internal chest diameter. The electrocardiogram showed low P waves suggesting auricular hypotonus. After about two months at home she suddenly went into coma with a very rapid weak heart action, dying within forty-eight hours without there being a clear establishment of the immediate cause of death, autopsy being refused.

The etiologic relationship of the acidosis to the auricular fibrillation seemed here so definitely demonstrated that a search of the literature was made to determine the frequency of this association, or the occurrence of acidosis with the arrhythmias in general. Little reference to this was found anywhere. Cohn,<sup>1</sup> in discussing this subject, mentions toxins, especially those of pneumonia, diphtheria and rheumatic fever as the only etiologic factors which might include acidosis, but no separate mention is made thereof. Osler<sup>2</sup> says: "As regards the etiology of auric-

\*Read before the Ramsey County Medical Society, March 26, 1928.

ular fibrillation, transient and recurring forms are observed in acute infections." Here the presence of a degree of acidosis may possibly be inferred, but otherwise no such inclusion can be made in this etiology.

Neuhof,<sup>3</sup> in discussing the production of arrhythmias, says in part: "With our present imperfect knowledge of the chemistry of the blood it is impossible to state whether other factors can produce heart block by interference with cardiac nutrition" (acidosis infections, toxins, anaphylotoxins, asphyxia). Fitz and Murphy<sup>4</sup> include cardiovascular diseases, with gangrene, as one of the causes of death in diabetes, with or without coma. No mention is made of the arrhythmias, but stress is laid on the importance of the treatment of the accompanying cardiovascular disease as well as the diabetes. Reid's<sup>5</sup> etiological classification makes no mention of acidosis as a factor. Woodyatt<sup>6</sup> in discussing acidosis does not include the arrhythmias as a symptom, sign or complication.

Joslin<sup>7</sup> does not refer to this association in his textbook but in a personal communication to the writer quotes an excerpt of a paper on his cases of coma, dealing with the circulatory phase. In this he says there is "some evidence of disorderly heart action" in a group of his cases, and that "irregularities were not infrequent," mentioning individual cases of auricular flutter, auricular fibrillation, pulsus alternans, and heart block.

#### DISCUSSION

The comparative infrequency of the association of auricular fibrillation with diabetic acidosis is easily apparent when one scans the literature. Textbooks yield little of value. Joslin's reports show an increasing attention to the circulatory system in diabetes, and Neuhof is calling our attention to the probability of toxic factors as causes of terminal irregularities of the heart. The case under discussion should not come under this group because the patient recovered from the attacks by the administration of insulin, and they did not recur terminally. The electrocardiographic findings of low P waves are interesting as significant of auricular abnormality, and the signs of decompensation over the last two months of life in this patient indicate the degree of myo-

cardial damage, on a toxic basis, which persisted after the fibrillation stopped.

Whatever the effects of diabetes with its abnormalities of metabolism may be, it is becoming increasingly clear that the complications affecting the cardiovascular system are not alone in the peripheral vascular bed, although it is here that the effects are usually seen. That acidosis has very definitely injurious effects on the heart proper can hardly be denied, and while it was the unusual occurrence of acidotic toxic auricular fibrillation which brought the circulatory system into prominence in this case, there was nevertheless a severe degree of myocardial damage associated, which is probably more frequent in diabetes than is at present recognized. It is hoped that this report will call attention to the necessity of the inclusion of acidosis as an etiological factor in the production of auricular fibrillation.

#### SUMMARY

1. Attention is called to the rarity of consideration of acidosis as an etiologic factor in auricular fibrillation.

2. A case is reported with such a relationship.

3. Review of the literature reveals little mention of this relationship.

4. The importance of attention to the heart as well as the blood vessels in complications of diabetes is stressed.

5. The infrequency of the occurrence of auricular fibrillation caused by diabetic acidosis, relieved by insulin, has made it seem advisable to make this report and call attention to its importance.

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# CLINICAL SYMPTOMS OF THE AUTONOMOUS OR SO-CALLED VEGETATIVE NERVOUS SYSTEM

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THE physiological experiments by Ewald and Goltz made in 1898 have proven that the sympathetic nervous system as such dominates vegetative life to a great extent even after extirpation of the spinal cord and severing of the spinal roots.

Our knowledge of the parasympathetic system has been gained more by physiological and pharmacodynamical study than by anatomical. Only the gangliated cords of the sympathetic system have lent themselves to a thorough investigation as a homogeneous anatomical formation.

The clinical observations of symptoms produced by "block and irritation" are made arduous by a lack of strict anatomical localization of the parasympathetic system, and even the experimental approach is very difficult.

It is interesting to note that there exists functionally a mutual relation as well as a certain antagonism between the sympathetic and the parasympathetic systems. Gaskell attempts to explain this antagonism on embryological grounds. The sympathetic supplies the muscles derived from the ectoderm and mesoderm, but to a lesser degree from that mesodermal part related to the ectoderm. The parasympathetic system is said to control those elements of organs that originated from the ectoderm and mesodermal parts embryologically related to them.

The sympathetic division of the vegetative nervous system has also a genetic relationship with the chromaffine system and by virtue of this relationship it manifests itself pharmacologically during life.

Symptoms in any organ are resultants from either irritation or inhibition of the nerve supply. In order, however, to understand the pathology of an organ or system of organs we must know the variations of these physiologically.

The physiological variations of the vegetative nervous system are by no means fully understood and it is therefore correspondingly difficult to ex-

plain its many functional aberrations. The tone of human organs is produced and maintained by *hormonal products* acting on the organs peripherally. This is especially the case in such diseases as M. Addisonii, Basedowii, diabetes mellitus, and tetany.

Nearly all the products of the endocrine glands show a certain affinity for the vegetative nervous system (neurochemism); at the same time the ductless glands are intimately related and under the control of the vegetative nervous system.

Typical examples of a single gland disease are relatively rare. Generally larger portions of the whole incretoric system are affected, which leads to a variable symptomatology, very difficult to classify.

In the physiological correlation between the ductless glands (chromaffine system, pancreas-insular apparatus, thyroid), the nervous component is dominant. Between the pancreas on the one side and the thyroid and chromaffine system on the other, are impulses that inhibit each other; for instance, failure of the pancreas causes hyperfunction of the thyroid and the chromaffine system. The secretion of the pancreas is an important regulator of the parasympathetic system; the chromaffine cells dominate more the sympathetic, while the thyroid secretion influences both parts of the vegetative nervous system.

In *Addison's disease* the syndrome as a whole designates the sympathetic part of the vegetative nervous system. We have vascular hypotension, hypoglycemia, adynamy, secretory indigestion, and the characteristic accumulation of iron-free pigment in the skin and mucous membranes, consequent to pathological changes in the chromaffine system (atrophy, sclerosis).

The symptoms of *Basedow's disease* are neither purely thyrogenic nor purely neurogenic, although it is true that many of its symptoms may be considered to be of purely neural origin.

The innervation plays a difficult part in the production of the Basedow syndrome along with the changes in the thyroid secretion. The functional relation of the thyroid gland with other ductless glands must not be minimized and there may further be as yet unknown constitutional factors in the production of Basedow's disease. The tachycardia is to be considered an irritation symptom. It results from stimulation of the accelerators and a simultaneous lowering of vessel tone from the center to the periphery (as stimulation of the vasodilators). The dilatation of the thyroid vessels, however, is thought to be due to a stimulation of the depressor nerves. The width of the eye-slit and the exophthalmus is caused by abnormal tone of the sympathetically innervated palpebral and tertius muscles, and the muscle of Mueller. The gaping lid depends on the augmented tone of the motor oculi and the Grafe sign on the raised tone of the levator palpebrarum (neck-sympath). The hyperidrosis is due to the stimulation of the sweat gland innervation. The increased metabolism and the glycosuria observed at times may be considered due to an overbalance of the sympathetic, in consequence of the disarrangement between physiological correlations of the thyroid, the pancreas, and the chromaffine system. Aside from the above, many intercurrent symptoms show an augmented tone of the parasympathetic part of the vegetative system; for example, the paroxysmal thin fluid salivation, gastric hyperacidity, irregular respiration, diarrhea, and rarely bradycardia. The abnormally potent effect of thyroxin is probably due to the influence of the chromaffine system, or to its regulating centers in the medulla (regio subthalamica) by which the adrenalin is potentiated and the tone of the sympathetically reacting organs raised.

Through the extirpation of the thyroid the excitability of the sympathetic nerves is diminished. The complete removal of the gland leads, as is well known, to the symptom complex of *myxedema*.

It is characterized by mental sluggishness and by a diminution of metabolism and a lowered production of heat. In the skin and subcutaneous tissues a marked swelling appears. Every glandular activity is reduced and trophic changes appear in the hair and nails. At a very early removal of the thyroid (before puberty) a severe general interruption of development appears, particularly a stunting of growth, due to a disturbance in the bone epiphyses, and a deficient development of the generative apparatus and brain.

Since the *picture* of Claude Bernhard, the important influence of the nervous system on *sugar metabolism* has been recognized, but not entirely explained. The difficulty of full orientation in this question lies in the known existence of mutual interplay between the ductless glands and the suspected coördinative relation of the vegetative nervous system with the ductless glands.

Through the "sugar puncture" we probably obtain an explosive evacuation of the chromaffine system through the sympathetic, in addition to which the tonus of the parasympathetic is not without considerable importance. The physico-chemical structure of sugar metabolism is under the influence of the nervous system and the ineret of the pancreas. In a diabetes mellitus the insular-apparatus is injured. As a result it is unable to keep the blood-sugar-level and blood pressure on a desired and necessary physiological level. The equilibrium of the vegetative nervous system is disturbed, with a preponderance in the sympathetic part of it. The recent experience with the use of insulin preparations has pointed out that the ineret of the pancreas is able to soon lower the blood-sugar-level to the extent of producing the well known symptoms of hypoglycemia.

As an unbalance in the vegetative nervous system may also be regarded the symptoms found in the *calcioprive constitution*, or at least in cases of abnormal mineral metabolism. Under these clinical manifestations we must consider tetany, laryngospasm, croup, and asthma, while a vicarious emphysema and cardiac palpitation enters upon the scene, and vascular cramps, angina spastica, angioneurotic edema, and erythema.

In children we have the exudative diathesis (eczema, urticaria) with tendencies to respiratory and digestive disturbances accompanied by eosinophilia; and it is interesting to note that later in life these children are not infrequently afflicted with bronchial asthma, which is always accompanied by eosinophilia (a functional increase of parasympathetic tonus).

In these children we frequently see the so-called "status thymicolymphaticus sive habitus adenoides."

In this status we have a functionally parasympathicotony, which is explained by the fact that the constrictor fibers of the bronchial musculature are innervated by the vagus and the dilators by the sympathetic. The sympathetic have fibers also for the vasomotors, while the bronchomotory and bronchosecretory fibers come from the vagus. The multipolar ganglions of the bronchial walls are seen as intramural ganglions.

An interesting phenomenon is the fact that the vegetative nervous system is more apt to be active at night, when voluntary physical and mental activity is more or less shunted out; for instance, attack of bronchial asthma, angina pectoris, beginning of labor, pollution, in fact all sex life.

A periodicity in the fluctuations of power between the vegetative nervous system and the in-

cretoric system is especially to be noted in woman. A regularly recurring wave of all physiological processes in a woman's life can be observed.

The grossest manifestations can be seen just before menstruation, which may take the form of nervous excitement, painful contraction of the smooth uterus muscles or the muscles of stomach and intestines, and, a little later, disorders of the thyroid gland, palpitation, moderate hypertension, increased vascularity and pigmentation of the skin, and increased activity of the sebaceous and sweat glands, and at times unexplainable slight elevation of temperature. All these manifestations are to be attributed to an unbalance between the vegetative nervous system and ductless glands as intimated above, and are most easily recognized in the female, but undoubtedly are present in the male, although they are not so easily recognized in the male, especially as to periodicity. These manifestations may be and are, as a rule, more or less within the physiological norm.

The visceral-nervous tonus surely plays an important part also in the tendency for persons to have diseases at certain periods of their life, as also at certain seasons of the year. In connection with this we may also bear in mind the fluctuating susceptibility to infectious diseases, intoxications, anaphylaxis, and immunity.

The *digestive tract* is professedly under the influence of the autonomous system, so much so that the welfare of the individual depends largely on the automatically harmonious function of the two divisions, namely the sympathetic and parasympathetic.

Winslow chose or coined the word "sympathicus" because the normal function of the digestive tract, which to a great extent is controlled by that great nerve structure, determines largely the sense of well-being and the moods of a person.

The peristalsis of the intestinal unstriped musculature is a complicated process. Each segment has a certain autonomy of function, and yet there is a harmonious and mutual physiology, which suggests that the various factors are: the exciting agent, vegetative nervous system, hormones, ions or various salts, impact of food products, and intramural nerve elements. Just in how far the strictly extramural nerve elements are essential to the digestive peristalsis is not known, but the discovery of the eight neuromuscular nodes gives some insight, for we know now that by the function of the *first node* the mechanical impact of food precipitates the esophageal reflex, causing food to be transported into the stomach through the relaxed cardiogastric sphincter, which is controlled by the *second node*. The

pyloric function is subordinated to the *third node*, situated at the termination of the primitive foregut near the common duct. The *fourth node*, situated near the duodeno-jejunal angle, the *fifth node* at the ileocecal junction, the *sixth* at the middle of the transverse colon, the *seventh* at the rectosigmoid junction, each controls its respective segment of the digestive tube, and, finally, the rectum is controlled by Keith's *eighth node*.

The functionally so-called spastic troubles of the esophagus depend upon the disharmony of the vegetative nervous system. The almost always intermittent spasms are to be reduced to a predominant tonus of the vagus, where very active ascending waves of peristalsis are present.

A stimulation of the vagus causes a contraction of the muscles of esophagus and cardia; the stomach is narrowed by alternating of its muscle layers; the pylorus is closed. Hypersecretion or hyperacidity is perhaps always present, both of which are the consequence of an impulse from the vagus. The estimation of the sympathetic causes many controversies. A great number of authors found motility, secretion and acidity after the stimulation of the stomach. Experimental stimulation of the fifth to tenth dorsal nerves causes a relaxation of the muscles of the cardia. The clinical symptoms, such as the disorders of motility, the continuous or crisis-like hypersecretion (succurrhea), can be thought of in this way. They are a preponderance of the tonus of the vagus or a decreasing of the sympathetic.

From this viewpoint the theory of the *spasmodic peptic ulcer* (v. Bergmann) is to be considered. The spastic condition of the stomach leads to a local ischemia by clamping off the afferent blood vessels; the mucous layers thus separated from nutrition are digested, whereby erosions and ulcerations result. Every lesion of the mucous membrane leads anew to spasms and disturbances of the secretory function, so that a continuous damage is done to the peristalsis. Anatomical changes may hereby develop through purely functional spasms of the muscularis (ulc. ventric. and duoden.). The ulcer itself does not cause the irritability of the vagus secondarily, but the irritability of the vagus brings about an increase of the secretory activity of the epithelial cells, which continues contractions of the stomach musculature, thus causing the ulcer. In regard to that neuromuscular apparatus it is important that it acts on the intestinal tract as a pacemaker, as does the block-system on a railway. Failure of the second node causes cardio-spasm; disturbance of the third produces the

condition of the pylorospasm; the fourth may be followed by *gastromesenteric ileus*.

The important influence of the vegetative nervous system is also illustrated by the fact that those medically or surgically healed remain stigmatized in the vegetative nervous system. The periodicity of the troubles of digestion often found in the history, the temporary disappearance and later reappearance as characteristic symptoms of the ulcer are more easily comprehended when a nervous base is assumed. The importance of the Meissner and Auerbach plexus, the intra- and juxta-mural system (enteric system Langley) has not been taken into consideration. Their functional activity has to be characterized in the following way: intramurally originating reflexes are modified in their course by the influence of the vagus and the sympathetic in an acceleratory or inhibitory manner. Considering the extensive branching of the nervous tracts of the individual organs in the abdomen, their reciprocal influence is easily understood.

An illness of the gallbladder, a chronic appendicitis, is not rarely found accompanying an *ulcus ventriculi* or *duodeni*. The most frequent reflex-connection probably exists between the gallbladder and stomach, which apart from other symptoms manifests itself in pathological conditions, as nausea, vomiting, dizziness, uncertain pains, disturbed appetite; this may be called a viscerovisceral reflex. During an attack of gallstones, changes of the stomach are found by fluoroscopy in this manner, that reflexes coming from the gallbladder produce pylorospasm, total contraction of the antrum, circular gastros spasms, inversely also "braking" the whole peristalsis of the stomach. The onset of gallstone colics caused by the stomach in consequence of mistakes in diet (alcohol, acid salad, sauerkraut, raw fruits and the like) seems to find its explanation in reciprocal reflex relations. It is probably the increased secretory and motoric function of the stomach which then brings about the cramp-like attack. An *achylia gastrica* reflexly caused has been observed after shutting off the cysticus. The oft-met constipation in diseases of the gallbladder which may increase to atony, even to complete ileus, may be explained in the same way as a viscerovisceral reflex.

Even though it has been shown that an innervation-disturbance of the vegetative nervous system may be one of the factors in the genesis of the ulcer, it does not follow that an ulcer is always caused only neurogenically, as shown by American investigators. The elective localizing power of streptococci isolated from infected teeth and tonsils could be demonstrated. The same principles of electivity that determine the localization or pharmacological action of chemicals and drugs may apply here. The recurring attacks of the chronic ulcer require in some instances intervals in one or more foci of a long period. The

hereditary tendency observed in other cases shows that more or less marked lesions occur in the organ at times; they all demonstrate the changing liability of the afflicted organs during the seasons of the year. For the development of an ulcer, varied conditions such as mechanical circulatory disturbances, emboli, infarcts, focal infection, vasomotor, psychic, and others play an important part.

Regarding the various clinical symptoms (pain, irradiation, Head-zones, Boas-point) in abdominal diseases, as far as our knowledge goes, the following is to be said: Pain is the leading symptom in all cases of abdominal diseases. The meaning of the sensibility of the internal organs is still uncertain and full of contradictions. Operations made under local abdominal cavity (stomach, intestinal wall, liver edge, gallbladder, kidney) are practically not sensitive to irritation (light, touch, cold, warmth). On the other hand, its blood vessels, especially those ending in the mesentery, are pain conductors, and the pressure conductory fibers of the abdomen join in the splanchnicus (rami communicantes lumbar 1-3 to the ganglions retroperitoneal) with the vessels. The greatest part of the abdominal pain is supposed to originate in the parietal peritoneum of the anterior and posterior wall of the abdominal cavity (intercostal and first lumbar nerves.) The pains in gastric ulcer may be caused by affections of the omentum majus and minus. The sensory innervation of the duodenum is doubtlessly furnished by the sympathetic tract. The question has not been decided, whether the sensitiveness in the splanchnicus depends upon sympathetic elements themselves or cerebro-spinal fibers. The sick person learns probably not only to feel pains, but to localize continuously increasing pains accurately in a certain organ, instead of feeling generally unpleasant. At decrease of the secretory function of the stomach the acidity is noticed as a feeling of emptiness or ravenous hunger; on the other hand, gastritis is noticed by many patients as a feeling of pressure and fullness. The cause of a pain in a case of a gastric ulcer is referred to the irritation of the base of the ulcer by the acid contents and the spastic contractions in the stomach muscles, so produced in the corresponding segment of the stomach. The hunger-pain is a consequence of the hyperacidity with excessive muscle contractions. The gastric crises are said to be peristaltic and antiperistaltic waves. In the same manner the painful attack of gallstones would be explained by the labor of the muscles in the gallbladder to expel the stone. The irradiation is typical for the abdominal pain, the vague and indefinite expansion of pain into the vicinity far beyond the realm of the diseased organ; this would be explained by the abundance of nerve network. In cases of an ulcer of the stomach a pressure point is often found. It results from the connection between rami communicantes to the corresponding segments in the spinal cord (D 6-7) and it comes by irradiation in the corresponding segment of

the spinal cord to a hyperalgesic zone in the corresponding segment to the skin, manifesting itself by an increased muscle-tonus.

A disturbance of the sensation in the eighth to tenth dorsal segments on the right side is a sign of an *affection of the gallbladder*, while a pain-point at the eleventh dorsal segment is more characteristic of a stone in the common duct.

The irradiation into the right shoulder, the brachial-plexus, in the muscles of the upper-arm, even to the finger points, is known in gallbladder disease. The half-sided girdle pain around the trunk is an example of the visceros-sensoric reflex in this sense that impulses of the sympathetic fibers lead centripetally into the spinal cord. These stimuli may spread into the brachial plexus and the right phrenic nerve. We find then pressure pain near the head of the humerus or in front of the neck in the level of the larynx. The vertigo in gastric or gallbladder diseases may also be understood from this viewpoint. Irradiations pass over the visceral nucleus of the pneumo-gastric nerve and go to the nucleus vestibularis, which causes functional disturbances of the equilibrium (vertigo e stomacho laeso).

The better knowledge of the sensory innervation of the organs of the abdominal cavity has been of practical use in surgery, namely anesthesia of the splanchnic nerve in combination with the rami communicantes lumbar 1-3. In carrying out the idea that the ulcer-genesis is also determined by neurogenic spastic disturbances, a few surgeons consider the weakening of the secretory and motory function of the stomach by means of "neuro-surgery."

*Spastic neurosis*, such as *spastic constipation* and *spastic ileus*, are attributed to dysfunction of the tonus increasing power of the parasympathetic system. The entity known as "enteritis membranacea sive myxoneurosis intestinalis" may be viewed from a similar aspect (vagotony).

The mucous secretion is an explosion of attacks; constipation and diarrhea can alternate, a rather common observation. During such spells bradycardia and eosinophilia are observed. The action of atropin, used for years in the treatment of these conditions, has only recently been explained by pharmacologists. Pilocarpin is efficaciously employed to stimulate peristalsis in atonic constipation; as is also physostigmin in some cases, if quick evacuation is desired.

Relations between the abdominal cavity and the blood circulation are expressed in the names of digestive reflex neurosis or a gastrocardiac symptom complex. The connection and the

singular factors of these diseases are not entirely understood, but the underlying cause is often a vegetative nervous disturbance. For instance, the asthma dyspepticum of children may be due to an atony of the stomach. How often has an appendicitis in children been diagnosed instead of a beginning (central) pneumonia!

At the *heart* there are relations between the sympathetic ramus cardiacus med. inf. and the fifth and sixth cervical segments.

Centripetal visceros-sensible reflexes are to be considered; however, the vagus of the heart itself is without sensory fibers. That sensory fibers originating from the cardio-aortic plexus ascend through the cervico-thoracic sympathetic to the nerve centers at the medulla oblongata has been proved by Jonnesco; he has resected the two last cervical and thoracic ganglions in cases of angina pectoris with relief from pain. Recently the nervous depressor is transected on both sides in such disturbances (aorta-aneurysma) with good results.

Patients with *locomotor ataxia* (tabes) frequently show some symptoms due to irritation of the autonomous nervous system, as there are the so-called stomach-bladder-rectum-crises. These symptoms aid in diagnosis; besides there are at times vasomotoric disturbances found, such as tachycardia, sweating, and dermographism, also disturbances of calcium and phosphorus metabolism with spontaneous fractures, even abnormal pigmentation.

Physicians of olden times have considered the flashes of heat and the dilatation of a pupil on one side as a very valuable symptom of tuberculous affection of the apex of the lung. Both signs may be explained by an irritation of the sympathetic nerve. This finding may also be of value in the diagnosis of an exudative pleurisy.

Influences of the temperature and climate are transferred to the body by means of the vegetative nervous system in various manners. An excessive loss of warmth of the abdominal skin causes a change in the distribution of blood in distant regions, for instance a hyperemia in the kidneys; chilling of the feet or excessive heat applied to the hands is as a rule followed by muscle contractions of the bladder. In cases of disease, these mutual relations are more apparent. From this viewpoint the mechanism of catching cold may be conceived as by means of

fibers of the vegetative system. Through disturbance of the skin circulation bodily immunity may be lessened, resulting in catarrh, coryza, and angina (tonsillaris). The relation between skin and kidney is evident in persons with attacks of paroxysmal hemoglobinuria produced by chilling of both hands in ice water (for purpose of examination). Certain reflexes, too, may regularly be found in constitutional "vaguslabil" individuals, such as the Aschner oculocardial phenomenon, the Tchernak test, and the Erben phenomenon.

The asthenic or thymico-lymphatic habitus possesses certain vegetative nervous features: the skin of the face and of the trunk changes rapidly in its blood-filling property (erythema pudicitiae); it reddens quickly and just as quickly becomes pale. The feet and hands are damp, moist, often blue-red, and cold. Sweat-secretion also is often present over the whole body. On tickling the skin, it becomes white (dermographismus albus) instead of red, due to the labile tonicity of the blood vessels. The tendency of these individuals to affections of the respiratory organs and intestines has already been mentioned.

A few symptoms of so-called functional neurosis—interpreted as neurasthenic—are to be considered of vegetative nervous system origin. A great many symptoms, called functional disturbances, in this way may have an organic basis; such conditions of nervousness as neurasthenia and hysteria. For every psychic development is joined involuntarily with the somatic one; the play of pupillary changes, the lowering or quickening of the pulse-beat, the deepening of respiration, even the intestinal motility, stand under the psychic influence. The observation of the psycho-galvanic reflexes has given us an extensive view and deeper insight into the mutual psycho-physical relations.

It is conceivable that as a result of the numerous connections between the vegetative and cerebrospinal systems, adenoids, for example, may cause an asthma bronchiale or even uterine troubles. In the same way fear and fright may produce an increased perspiration and a higher peristalsis. If excitation of the vegetative nervous system is often repeated, or if these are very severe, they become fixed, as one not rarely sees in juvenile hysteria or psychasthenia. The psy-

chically caused reflex thus becomes pathological.

In spite of the autonomy of the vegetative system the psyche is also doubtless an influencing factor. And just herein lies the importance of suggestive therapy for functional nervous disturbances. The vegetative system may commonly be responsible for the unconscious general sensation which we usually refer to, on the one hand, as comfort, composure and calmness, or well-being, and on the other hand as discomfort, indisposition, restlessness and disagreeableness.

From a practical standpoint the vegetative system is worthy of notice, in accident cases, especially in the formal judging of accidents. Those hurt in accidents and showing signs of psychogenic reaction, pronounced in the vegetative system, naturally react more lastingly to the effect of trauma, because of the exhaustibility of the vegetative system. Special attention must be paid to the constitutional findings in such diseases as pseudo angina pectoris, Basedow disease, bronchial asthma, gastro-intestinal neuroses, and dysmenorrhea, for which the vagotomy prepares the disposition. The examination must especially point out the constitutional findings.

Surgical treatment has proven successful in certain conditions due to disturbances of the vegetative nervous system. Periarterial sympathectomy is recommended in Raynaud's disease, acrocyanosis, trophic ulcers and edema, and endarteritis obliterans. Cervical sympathectomy has been applied to exophthalmic goiter, migraine, glaucoma, trifacial neuralgia; resection of the auriculo-temporal nerve is proposed to suppress parotid secretion in case of parotid fistula. The methods of Lartajet and Bonnet, of section of the nerves of the bladder and stomach, may be merely mentioned.

The secrets of the difference in individuals and races is hidden in the incretoric system; the difference in skeletal conformation and external appearance is dependent on indiscernible differences as yet in the ductless glands and in the character of the internal secretions they furnish. The vegetative nervous system harmonizes and adjusts the individual as to temperament and character. The multiple interdependent connections between the two systems seem to be regulated and coördinated automatically.

In conclusion we may say that there are yet

many unsolved problems in the field of the autonomic vegetative nervous system, that have to be worked out for the welfare of humanity and the advance of medical science.

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(The writer was co-editor of this work.)

#### COMBINATIONS OF COD LIVER OIL AND PHOSPHORUS NOT ACCEPTABLE FOR N. N. R.

The Council on Pharmacy and Chemistry reports that the use of elementary phosphorus in the treatment of rickets is based on the observations of Wegner in 1874, that the administration of white phosphorus in minute amounts caused the formation of a dense band of the epiphyses of the long bones. Subsequently conflicting reports as to the value of phosphorus in rickets were published. Death occurred in several instances from excessive doses of phosphorus. Practically all those claiming to have obtained good results from the use of phosphorus used it in combination with cod liver oil (now known to be a specific in rickets). The accumulated evidence is unconvincing as to the value of phosphorus; furthermore, it is known that phosphorus is a dangerous drug and the routine administration of phosphorus in combination with cod liver oil is to be discouraged. In consideration of the new evidence and the opinions based thereon, the Council decided that preparations of cod liver oil containing phosphorus are unacceptable for New and Non-official Remedies as being unscientific and inimical to the best interests of the public and the medical profession. The Council decided to omit from New and Non-official Remedies all mixtures containing phosphorus in combination with cod liver oil. (Jour. A. M. A., July 14, 1928, p. 97.)

#### THE IRON CONTENT OF FOODS

As a carrier of oxygen and as an activator of cell functions, iron has significance out of all proportion to the amount in the body—less than a tenth of an ounce, or the weight of a cent. The function of iron in the body has been responsible for considerable pseudo science and actual quackery. The bill-boards have sounded the call to have one's iron day by day. As regards the possibility of a shortage in the iron intake through food, Sherman states that the typical American dietary does not furnish any such surplus of iron as would justify the practice of leaving the supply of this element entirely to chance. Rather, foods should be selected with some reference to the kinds and amounts of iron compounds which they contain. Arranged in descending order as to their iron content, as determined by recent analyses, the classes of foods come as follows: dried legumes, green leafy vegetables, dried fruits, nuts, cereals, poultry, green legumes, roots and tubers, non-leafy vegetables, fish and fruits. Different samples of the same food material show great variations in their iron content. Cabbage, celery and head lettuce, vegetables containing little chlorophyll, were found to be low in iron. Salt water fish contain more iron than fresh water fish. Fish with dark-colored tissue contain more iron than those with light-colored tissue. The dark meat of poultry is likewise higher in iron than the light meat. (Jour. A. M. A., July 28, 1928, p. 250.)

# BRUCELLA MELITENSIS ABORTUS INFECTION IN MAN

## DISCUSSION AND CASE REPORT

EDGAR T. HERRMANN, M.D., and G. EDLUND, M.D.

*Saint Paul*

**H**ISTORICALLY, undulant or Malta fever has been known since the days of Hippocrates. Its precise bacteriology we owe to Bruce, who isolated the organism from the human spleen in 1886.

Wright and Smith in 1897 showed that the organism discovered by Bruce was agglutinated by the serum of patients. Up to the Spanish American war the disease was unknown in the United States and at this time it was introduced by soldiers who had taken part in the Porto Rican campaign. The first case originating in this country was reported by Craig in 1905 and occurred in a hospital nurse. The etiology here was undetermined and it is interesting to note that Craig at that time suggested the possibility of Malta fever as being the true cause of a certain proportion of obscure, continued fevers found in this country. In 1911 true Malta fever was found in certain parts of Texas, especially in the Pecos Valley, a section where Maltese goats had been introduced. Finally, in 1922 an epidemic of Malta fever, traced to goat's milk, occurred in Phoenix, Arizona.

With the last decade, as the result of investigations conducted by Alice Evans, a new aspect of undulant fever has been made known to us. For many years the problem of contagious abortion in cattle and other domestic animals has become of economic importance, and the possibility of human infection has been thought of for a long time. Alice Evans in 1918 showed that the organism causing Malta fever and that of contagious abortion in cattle are closely related in their morphological, cultural, biochemical, serological and pathogenic characteristics. Her work was rapidly confirmed by investigations here, in Europe, Egypt and Tunisia. The probability of human infection by the *Brucella abortus* organism was made a certainty in 1924 when Keefer reported a case from Johns Hopkins Hospital in which the organism of contagious abortion was isolated from the patient's blood. Clinically the case had all the earmarks of Malta fever. Since that time it has become increasingly

evident that human infection with *Brucella melitensis abortus* is not uncommon.

The nomenclature of the *melitensis* and *abortus* groups of bacteria has been in a state of confusion and it was only in 1923 that Alice Evans suggested a satisfactory classification. The organism isolated by Bruce in 1887 he described as the *micrococcus melitensis*. Durham, in 1898, first described a bacillary form. Evans worked with strains coming from Bruce's laboratory and found them coccoid, but the greater number of strains observed by her were rod-shaped. Both types possess the same cultural and biochemical reactions and cannot be differentiated by simple agglutination reactions. Included in the same group of organisms as above stated, is the *Bacillus abortus*, discovered by Bang in 1897. Meyer and Shaw in 1920 suggested the generic name *Brucella* to include both Malta fever and contagious abortion organisms and the result of this has been that the one is termed by Evans *Brucella melitensis melitensis* (human and caprine sources) and the other *Brucella melitensis abortus*, which includes the majority of bovine and porcine strains. The two varieties, *melitensis* and *abortus*, are more closely related than are, for example, types 1 and 2 pneumococci, which can be differentiated by simple agglutination tests. Evans has further shown that the species may be divided into seven serological groups, four of which are unimportant. The majority of bovine and porcine strains and two human strains fall into a large group which is called *Abortus*. Another group includes strains human, equine, bovine and caprine and is called *Melitensis A*. Finally, a last group of three strains characterized structurally as having a predominance of coccoid cells is called *Melitensis B* and is of interest because it was the group that Bruce discovered.

Numbers of investigations since 1911 have shown that cow's milk from various sources contains the *abortus* organism and in percentages varying from 10 to 32. The figure rises to 41 in cow's milk from recently aborting animals.

With this in mind it is interesting to see that as early as 1913 Larson and Sedgwick published a report in which they tested the sera of women and children by complement fixation, using as antigen *Brucella abortus*. From 17 to 48 per cent of the serums so tested gave positive reactions, while one group of children, who had drunk milk from a herd never affected with the disease, gave uniformly negative tests. They considered that they were dealing with a state of active immunity. Four children with enlargement of the spleen were also tested, two giving positive tests. Spontaneous abortion in women, also, in a number of reported cases occurred on farms on which an epidemic of abortion among cattle was prevalent at the same time.

With these facts in mind, together with Keefer's proof in 1924 of active infection in man, one obviously will have many obscure cases serologically tested. The question of strength of titer necessary to make a positive diagnosis at once arises. This is usually accepted as being 1 to 50, though one investigator, the Italian Fici, requires 1 to 200. Alice Evans tested 500 un-specific sera and in 11.8 per cent found positive agglutinations of 1 to 5 or higher. Two were positive in 1 to 40 and one in 1 to 320 dilution. Her explanation for the positive reactions in low dilution are: "(1) the reactions may not be specific; (2) the agglutinins may have been acquired in a secondary manner by absorption in the intestines from the agglutinins present in milk that has been ingested; (3) the agglutinins may have been produced as the result of an infection some time in the past; (4) they may indicate a present infection." She dismisses the first two possibilities, retaining only past or present infection.

Two other points need mention. First, some writers have held that the serum of tuberculous people presents special properties toward agglutinating *Br. melitensis*. Fici tested 98 per cent of such sera and found only one positive in high dilution (1:2000). This person had an active infection at the time. With the prevalence of raw cow's milk as a dietary factor in tuberculous patients, obscure temperature reactions in these people achieve an added interest. The second point is that recently Francis and Evans have shown that there is frequently cross agglutination between *Brucella melitensis* and *Bacterium*

tularensis. Usually the higher titer in any case presenting this difficulty will decide the question; occasionally, however, both are positive in high dilutions. When this happens the serum in question must be subjected to agglutination absorption tests for differentiation. Since certain cases of tularemia and undulant fever may have an identical symptomatology this fact must not be lost sight of.

Undulant fever as found in man is contracted from goats, cattle, or hogs, and to a large degree all three types of infection are clinically indistinguishable. Where goats prevail, as on the island of Malta, the disease is contracted by consuming infected milk or cheese, or by handling infected goats, goat meat, soil or dust. The same mode of infection obtains with reference to hogs or cattle. Both porcine and bovine types have been reported in this country and the relative importance of the two is as yet unclear. Theobald Smith feels that some human cases occurring through ingestion of infected milk are really porcine in nature, namely, cow's milk is contaminated on a farm where hog abortion is in progress. The organism is very resistant and the caprine variety at least will live for 80 days in dust, or more than a month in fresh and salt water. The prick of a contaminated needle is sufficient to cause the disease in man.

Pathologically the disease presents a septicemia, the organism entering through the alimentary tract and being found in spleen, liver, kidney, lymphatics and salivary glands. Most cases show a definitely enlarged spleen, though not by any means all. Whether or not one attack confers immunity is at present not clear. The incubation period is probably about two weeks in man and the onset slow, presenting very much the picture of so called "walking typhoid."

The symptoms and physical signs vary within the limits of febrile diseases generally. A discussion of these may be best undertaken by describing the findings in the case here reported which was seen at St. Paul in consultation with Dr. Edlund.

The patient was a male, aged 17, whose past history except for measles and pertussis in childhood is essentially negative. In August, 1927, he had a severe cold with upper respiratory cough that did not entirely clear up throughout the winter and up to the present illness. For some weeks before he was seen, the patient complained of attacks of marked weakness and night

sweats that varied in intensity, some soaking the night clothes, others being mild in character. Together with these he suffered from occasional attacks of palpitation. He complained also of "growing pains" in his legs, particularly the calves. On two occasions, once

agglutination reactions with *Brucella abortus* and tularemia, the former being reported positive in a dilution of 1:1920. A second test gave the same result. At this point Dr. Downey of the University of Minnesota was asked to report on a blood smear and his account

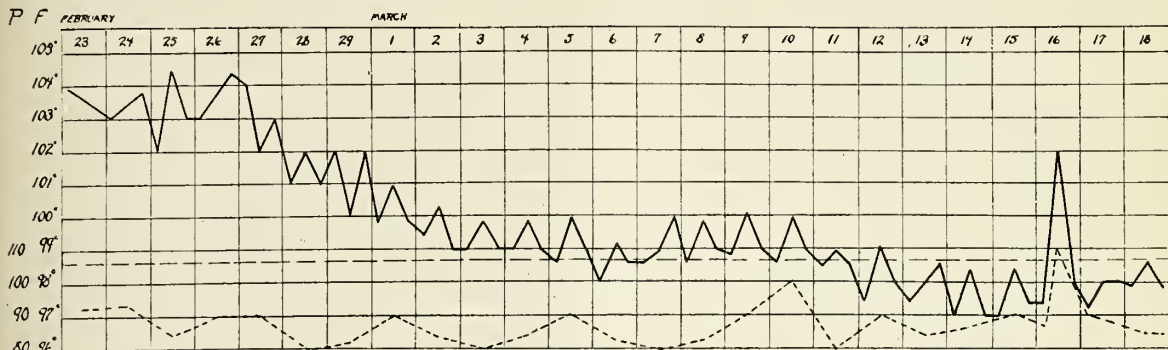


Fig. 1

in December and once in January, he completely collapsed because of these pains and had to be taken home.

On examination, the temperature was found to be 104 degrees with a pulse of about 90. The nose presented a deviated septum, but there was no evidence of sinus disease. The physical findings were essentially negative except for a palpable spleen, appearing on second examination, and slight enlargement of the axillary nodes. At no time was there evidence of any other physical pathology. The skin throughout remained clear, there were no gastro-intestinal symptoms, no joint involvement appeared and pain except in the legs was absent. Sharp pains in back and limbs are very frequently described in cases of Malta fever, together with occasional joint involvement. There was present, through the entire period, a sense of marked physical weakness, together with night sweats that gradually decreased in intensity. X-ray examination of chest and heart was essentially negative, and blood, urine and stool cultures, together with repeated Widal's, were negative for the typhoid group. The morphological examination of the blood was of marked interest, there being, among other things, a persistent though moderate leukopenia. The temperature curve, here shown, is almost exactly that of a typhoid in the last half of its course (Fig. 1). This, with the spleen and leukopenia, was very suggestive. The pulse likewise was never high and gave evidences of a slight diastolic from the beginning. However, there were at no time rose spots, the abdomen showed no distention, and the character of the palpated spleen did not resemble typhoid. The presence of eosinophiles, also, was not in favor of typhoid, since these disappear early from the blood picture and do not begin to reappear until the third stage. From a differential point of view one was obliged to rule out, besides the typhoid group, tuberculosis, malaria, endocarditis, central pneumonia, sepsis, angina, influenza, and finally tularemia or Malta fever.

No other signs arising, the serum was, at the end of the first week, sent to the State Board of Health for

is herewith reproduced. "The differential count based on a count of 200 cells is:

PMNs .....	33.5%
Lym. ....	51.5%
Monocytes .....	9.5%
Basophiles .....	0.5%
Plasma cells .....	5.0%

As far as the lymphocytes are concerned I find the picture much like benign lymphadenosis (infectious mononucleosis), although the percentage of lymphocytes is lower than in most of our cases of benign lymphadenosis. Morphologically they show the same features. Many of them are large and have an increased amount of cytoplasm which is quite basophilic in some of the cells. The latter approach the plasma cell in structure and there is an occasional genuine plasma cell. In the differential count I have called all of these basophilic cells plasma cells. All the lymphocytes are mature cells, but on account of the increased cytoplasm and excessive basophilia in some of the cells we shall have to list most of them as atypical. Out of 103 lymphocytes counted, 75 belong in this group of atypical cells.

The monocyte percentage is increased somewhat and about half of them have an atypical lobulation of the nucleus. The most numerous and conspicuous large cells are lymphocytes and not monocytes.

The PMNs show a very marked shift to the left and 70 per cent of them have toxic granulation. In the differential of 200 cells there were 67 PMNs. Of these 4 had band-shaped nuclei, 7 had a nucleus consisting of two straight pieces arranged like a figure 7, 24 had a horseshoe-shaped nucleus, 5 had a nucleus like a figure 3 (without any lobulation), 8 were "S" shaped, 13 had bilobed nuclei and 6 were trilobed. The simplification of the nuclei seems to be due chiefly to toxic degeneration rather than immaturity. This is the typical "toxic" neutrophil picture which frequently goes with infections of various sorts, especially when the prognosis is poor. In this case it is much more pronounced

Date (1928)	2/27	2/28	2/29	3/1	3/2	3/5	3/6	3/7	3/8	3/9	3/10	3/11	3/12	3/13	3/16
Hbg.....			92								88		88		
RBC.....			4820000								4700000		4780000		
NCC.....	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200
Leuk.....		6600	6100	6100	5800	5900	5400	6200	5900	6500	6500	6900	6200	6000	7500
PMN.....	49.5	50.5	49.5	56.5	56.5	42.5	47.5	48	50.5	49.5	47	45	44.5	45.5	49
Lym.....	19	45.5	46	39.5	48.5	53	49	49.5	46	52	49	55.5	51	50.5	47.5
Lg. Mon.....	1	3	2.5	2	3	3	2	2	2.5	3	3.5	.5	4	2.5	2.5
Eosin.....		1	2	1.5	2	1	1.5	.5	.5	.5	.5	.5	.5	1.5	.5
Baso.....							.5								

Fig. 2

than in any case of benign lymphadenosis that I have seen."

Observers throughout the world are generally agreed that the infection gives a leukopenia, though Bruce himself reported a normal leukocyte counts and Mathes speaks of a leukocytosis. Duffie, who reported two fatal cases with bronchopneumonia, give a leukocyte count of 20,000, which is probably due to the complication. In general, very low leukocyte counts are recorded. Belyea, reporting a case from Washington, in nine counts finds the highest 4,600, the lowest 2,200. Those of the person under discussion varied as shown in the figure. There is usually a moderate or marked monocytosis, substantiated in this case. The counts here also showed a lowering of the normal eosinophilic percentage. Dr. Downey's report of a marked PMN shift to the left is of interest, since in spite of it the patient made an uneventful recovery.

The organism of contagious abortion is recoverable from the blood and urine but the procedure is still difficult, and in this case failed. When joints are infected they are often recoverable from the synovial fluid for long periods of time. Urine and blood chemistry showed no changes from the normal in the present case, nor are such changes reported.

The treatment of *Brucella abortus* infection in man, aside from the usual dietary and expectant measures used in any fever, is still unsettled. In this country, intravenous mercurochrome has been used with some effect. The figure showing the temperature curve in the reported case under the 16th of March shows mercurochrome reaction. On the continent, good results are reported from the intravenous use of 2 to 4 c.c. of a 10 per cent solution of collargol, intravenous trypaflavin, and various silver preparations as well as specific vaccines. Mercurochrome is perhaps as effective. Its use in the present case is not, of course, conclusive.

The general prognosis of *Bacillus melitensis* abortus infections in man is good. It differs usually from the caprine variety in being less severe and giving fewer undulant recurrences of fever; thus its course is, on the whole, shorter. The range of severity is wide, from ambulant cases with only slight temperature reactions to malignant and rapidly fatal cases. Two of the latter were recently reported by Duffie, in Michigan. At present, the case here under discussion



Fig. 3

Fig. 3. Geographical distribution in the United States of *Brucella abortus* infection in man.

no longer runs a temperature, and feels better than he has ever felt. He is stronger and is gaining in weight. An agglutination reaction carried out on the 16th of April showed a titer of 1:640, a marked improvement from 1:1920.

One is convinced that the disease is not actually rare, but simply so by omission. Contagious abortion among cattle and hogs is widespread in the United States and every year adds to the list of reported human infections both in number and geographical extent. South African, Italian, Palestinian, Dutch East Indian, as well as continental and English cases are already on record. The geographical distribution of *Brucella abortus* infection in this country among human beings is shown in the next figure. It will be seen that thirteen states have reported cases, Texas and Arizona alone supplying those of caprine origin. This was the eighth case reported in the State of Minnesota during the past five years, during which the State Board of Health has been testing for it. Of these eight, three were reported in the southern part of the state, two in the northern and three in the western, this being the first case in this immediate vicinity.

In conclusion it seems worthwhile again to point out the conditions with which this infection may be confused. Typhoid, unless culturally proved, may be Malta fever. Obscure fevers that show no septic focus, in the absence of tuberculosis, may be forced into the camp of either tularemia or Malta fever. And finally, influenza, that much maligned and frequently utilized protective medical shield, may, in certain cases, no longer be obliged to sail under false colors. Infectious abortion is widespread and agglutination reactions easily procurable.

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NOTE.—Since the above article has been written the State Board Laboratory has investigated the two herds from which the patient was getting raw milk. A herd of ten cattle at Forest Lake was tested and found to be negative. Twenty-three cows out of 120 cows in another herd were tested with the following results: five were positive in agglutinations of 1:250 and up; four were positive to 1:100, the remainder being negative. This herd may be called a transient one because as soon as a cow falls below par in milk production she is taken to South St. Paul, sold and replaced by another from there. An average of five cows a week are traded in the summer. Dr. Fitch, professor of Pathology at the University Farm, states that five definite positives in twenty-three tests is a very low percentage. In some recent investigations he tested three herds producing certified milk and found 33 per cent positive in one of these herds and over 20 per cent in the other two.

#### GROUNDLESS FEAR OF RADIUM

A prominent lawyer has called the attention of the American Society for the Control of Cancer to the fact that cancer patients are being deterred from accepting radium treatment through fear aroused by the experience of a number of industrial workers who have been injured through the use of a radium compound in painting watch dials. It seems that the large amount of newspaper publicity given to these cases has aroused apprehensions which are standing in the way of employment of a curative measure for which there is no adequate substitute.

Radium, when properly used, affords such a valuable means of treating certain forms of cancers that a brief explanation of the ways in which this element is employed in cancer seems desirable in order to assure the public that there is no danger of the peculiar form of poisoning which has afflicted the industrial workers.

In painting the watch dials the workers are said to have pointed the brushes used to apply the radium paint by placing them momentarily between the lips; this operation repeated innumerable times resulted in actually transferring particles of the radium compound into the bodies of the workers. From these particles radiations have continually taken place, to the injury of the surrounding parts. There has been no way by

which these particles could be removed from the body or prevented from continuing to give off their destructive radiations.

In the treatment of cancer neither radium nor any of its compounds is left permanently within the body. The material is applied either outside of the body or enclosed within glass or metal cases from which it cannot escape. These are removed after a sufficient time has elapsed to enable the element to do its work. It is as important to stop the application when the desired effect has been accomplished as it is to apply the radium in the first place.

The use of radium in cancer is today surrounded by more safeguards for the patient and attendants than is commonly recognized. The applications should be made only by physicians of thorough training and experience. The amount of radium employed, the method of its administration, the duration of an application, the number of applications in a course of treatment and other details are prescribed after a careful consideration of the circumstances and conditions pertaining to each individual case and carried out with many precautions.

Radium and  $x$ -rays, like surgery, are such valuable weapons against cancer that the public cannot afford to entertain needless fears in respect to them.—Campaign Notes. Am. Soc. Control of Cancer, July, 1928.

## A FENESTRATED T TUBE FOR USE IN JEJUNOSTOMY

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IT is not my intention to take up the subject, even in a superficial manner, of the various phases of intestinal obstruction; nor have I any desire to delve deeply into any one or more of its several phases. Treatment, only in so far as it relates to enterostomy, will be considered. Whatever the real causes of death may be in ileus, where there is distention of the small intestine, retrostalsis and vomiting, if the condition can be recognized early enough, a jejunostomy with efficient drainage, will avert a calamity in a large proportion of cases.

Ileus is an emergency, often not easily recognized because it is generally post-operative, being masked by the post-operative symptoms. Quite a large percentage of patients following operation become distended and vomit and do not have ileus. On the other hand, cases with similar symptoms, gradually, or suddenly, merge into a recognizable condition of ileus. It is essential that an enterostomy be done as early as possible but even in some seemingly hopeless cases it has proved effectual. Success in this form of treatment, because you have a patient to deal with who is desperately ill, depends on the early recognition of the ileus, and the carrying out of a technic which is simple, quick and safe, to be followed by a post-operative technic concerned in the thorough evacuation of the septic contents of the intestine. The use of the fenestrated T tube with the technic I shall describe will meet the above mentioned desiderata.

When an abdominal surgeon has done an operation on a patient who is in a low condition, no matter how skillful his service, the *bête noir* he dreads is post-operative ileus. Once the intestine is overdistended and the stomach dilated the condition generally becomes worse instead of better. Why waste time and the patient's vitality with prolonged efforts with enemas and gastric lavage? Why go home, and depend upon your nurse to worry through the night with enemas and the emesis basin? If you do procrastinate in this manner you will have a moribund patient to deal with. If you do an enterostomy, preferably a jejunostomy, and a high

one at that, at the first opportunity you have, after you believe that it is indicated, you can go home and sleep. Don't wait until you are certain that your patient has ileus. There is no added danger in the operation. You can do it under local anesthesia; if necessary you can do it with the patient in bed. You do not need a trained surgical assistant. The nurse at hand is fully competent to render all the assistance necessary, and you can do it in a very few minutes. I speak of this as a night operation. Most surgical emergencies are night operations, but the same facts apply, the same conclusions are arrived at, and the same results obtained in the daytime. I have made a night picture and a night episode of it, because this is the time we are apt to procrastinate on account of disturbing the hospital or home routine.

What a gladsome sight, after you have done this simple thing, to see your patient—who was vomiting continuously, perspiring profusely, with all the symptoms which might lead up to impending dissolution—cease vomiting, and hear the gas gurgle down the tube, find your bottle reservoir at the bedside filling with intestinal fluid and note the upper abdomen and epigastrium flatten down to slightly proportions! Why not in all cases that are essentially desperate, after, for instance, a difficult operation, do the jejunostomy on the table before the patient is put to bed? In all cases of intestinal obstruction from whatever cause, volvulus, kinks, adhesions, or what not, why not always do a supplementary enterostomy? Or, if a late case, do an emergency jejunostomy, and after the patient rallies attend to the causative pathological condition? If the patient does not rally, he or she would not have stood the major operation.

I used to dread enterostomy and fecal fistula cases, because of the troublesome and sometimes protracted drainage onto the skin; and in my early experience had some severe dermatoses. I used all the means and remedies I ever heard of or could invent, without much success.

Within the last year I hit upon a plan suggested by seeing a case recently returned from

an orthopedic surgeon at Iowa City. The case was one of sacro-iliac strain, and the patient was plastered over the back, hips and abdomen with broad strips of adhesive plaster. I then conceived the idea of using adhesive plaster in the form of shingles in the same manner a roof is shingled. A quadrilateral is outlined as follows: One strip transversely across the body just below the breasts, a similar strip transversely across just above the pubes, one strip on either side vertically over ascending and descending colon, respectively. By shingling inwards in this quadrilateral, making but a slight overlap, you will converge to the site of the fecal fistula. Whatever fluid runs out, either under or over the shingles nearest the fistulous opening, seeps to the upper side of the shingles next beyond this zone.

Once a day the strips nearest the fistula will have to be removed, and, as they are wet, will come readily away. Sometimes you will have to remove the whole mass, but only rarely. What fluid gets under the adhesive does not stay long enough to make the skin sore. Upon dressing, the skin is first mopped off with a piece of gauze saturated with warm water, which is followed by mopping with alcohol in the same manner except where the skin is sore. The skin is then dried and fresh plaster is reapplied. This technic is rather expensive and somewhat time consuming, but you will eliminate entirely the horrible dermatosis that you would otherwise have, and you have a grateful patient during the entire convalescence.

Now that we have all come to an agreement that a timely enterostomy, and particularly a high jejunostomy, is, par excellence, a life-saving emergency operation, and can be done without hazard to your patient, I will proceed with the subject matter of this paper. For about ten years I have been employing a T tube, as an enterostomy tube, modified from the T tube in common surgical use, as a common bile duct drainage tube. I was led to adopt this tube in this way: About ten years ago I had an emergency enterostomy to do, and, in looking over my equipment, the only immediately available tube I had for use was one of these T tubes.

The T tubes come in four sizes, *i.e.*, small, medium, large, and extra large, corresponding to French catheter sizes 20-26-30-32. I have used for enterostomy the medium and the large sizes. The head of the T-tube is about three and one-

half inches long and the stem is about ten to twelve inches long. The tube is modified by putting fenestra (generally three), one fenestrum over the site of the junction of the head with stem, and one on either side of this, so that the head of the T tube, within the intestine, has five openings, *viz.*, two at the ends, and three on the upper surface.

A vertical incision is made to the left of the umbilicus (or elsewhere if desired), through the outer portion (not border) of the rectus. The depth of muscle on either side of an enterostomy later facilitates early closure of the fistula. When the fascial plane overlying the peritoneum is reached, make this part of the incision as short as is possible to the delivery of a loop of intestine far enough out of the abdominal cavity to make the enterostomy. You can deliver a sizeable loop of jejunum or ileum through a fascial incision not much over an inch in length. Bowel clamps, with rubber tube covering, or the fingers of an assistant, are applied about five inches apart, after stripping this segment empty.

There is no need to worry, or even to know, which is the proximal, which the distal, end of the loop delivered, because the T tube is identical in either of its longitudinal extensions within the bowel. After the small fascial incision is made, the first (distended) loop seen is hooked up into the incision. A small incision is made transversely through the coats of the intestine. One end of the head of the T tube is passed in one direction into the bowel nearly to the junction, but not quite; the other end is passed into the bowel in the opposite direction. While this is being done, either margin of the bowel incision is in the grasp of a locked tissue forceps and the tube is fully introduced. A purse-string suture of No. 2 twenty-day catgut is passed around the incision in the bowel and drawn very snugly about the tube and tied. No other suture connected with the tube or the enterostomy (proper) is applied to the peritoneum, intestine, or fascia.

The bowel being insinuated back into the abdomen, one or two sutures are put on either side in the fascia. Perhaps the greatest advantage of this T tube now comes into play. The intestine at the site of the enterostomy, owing to the secure hold of the tube in the bowel, can be very closely approximated to the parietal peritoneum, by rather forceful traction on the stem. It will in no sense injure the bowel by pressure

necrosis, on account of the flexibility of either end of the tube in the bowel. The pull comes at the site of the enterostomy. When the intestine is pulled snugly up into place by traction on the stem a heavy silkworm gut suture with a deep bite of the needle on one side fastens the tube to the skin and holds the intestine snugly up in place. There can be no possible leakage around the tube into the abdomen, at the enterostomy site, for within twenty-four hours the abdomen will be shut off from adhesions. The silkworm gut in the skin makes it "fool proof" because nothing but willful and excessive traction could pull the tube away from the skin and out of the intestine. This makes a sure guard against accidents. To be doubly certain, another silkworm gut suture may be put through skin and tube on the other side of the incision. Suture the incision, muscles and skin, in any manner. By means of a glass connecting tube connect the end of the stem of the T tube with a section of rubber tubing. Douche-can tubing generally is used. A pint bottle is hung low on the side (either side) of the bed and the end of the tubing inserted into this bottle. After the tube starts draining well, this acts as a syphon and supplements peristalsis and intra-abdominal pressure. The small bottle has great advantages. It can be inspected at all times and emptied frequently and changes in the quantity and quality of the discharge readily noted. There will generally be no leakage around the tube for three or four days until the function of the bowel has resumed either of its own volition or by help from low enemas. The tube need not be removed as soon as leakage starts and may be left in a week or even longer, but it is a better plan to remove it after there is considerable leakage around the tube. There is no trouble whatever in removing the tube. It may come a little hard but it will do no harm through any force necessary to bring about its removal.

It is of the utmost importance to evacuate the septic contents of the intestine as soon as possible. This can be readily accomplished by lavage in this manner: Disconnect the stem of the tube from the rubber tubing, and raise it to a vertical position. Insert the end of a funnel into the open end of the stem, pour in normal saline or sodium bicarbonate solution, and fill intestine to capacity or tolerance. Then depress the end of the stem as low as possible and syphon

the fluid off. For one course of lavage repeat two or three times. Repeat the lavage at hourly intervals if necessary. If the tube is draining profusely, lavage can be dispensed with, unless the enterostomy is a preliminary operation; in which case it is imperative to empty the bowel by frequent courses of lavage.

Haggard quotes Sampson Handley as saying "fecal vomiting should not be looked upon as the sign of obstruction but as the sign of impending death." I would like to again stress the necessity of doing your enterostomy before the vomiting is decidedly fecal and the patient becomes moribund.

Early closure of the fistula, and prevention of the dermatosis resulting from drainage onto the skin, could be most easily brought about by following the plan of Dr. C. H. Mayo, which consists of making a perforation through the omentum, and bringing the stem of enterostomy tube through this perforation. The drainage stops almost immediately after withdrawal of the tube. If the omentum were readily available, through the small fascial incision, and there were no need to explore, handle the intestines and consume time, this would be of the greatest advantage; providing that, at the time of withdrawal of the tube, obstructive symptoms were entirely lacking and the patient were in a fair way towards recovery. In the ordinary case you will only see in the site of the small fascial incision a distended loop of bowel, and it would seem, on the whole, the better plan to partly deliver same, and complete the enterostomy.

I doubt the advisability of an enterostomy in a case of intussusception. If you have a late case of volvulus, or mechanical obstruction, the correction of this without an enterostomy may hasten death by allowing the highly poisonous material to fill the healthy bowel below the site of the obstruction. This will cause an overwhelming absorption of the toxins because there is added a vast area for absorption. A preliminary enterostomy of the distended bowel, a short time prior to the exploratory for radical operation, offers the greatest chance for saving life. The introduction through the enterostomy tube of normal saline or sodium bicarbonate solution greatly facilitates syphonage. If the tube stops draining, fill the intestine with fluid. The T tube offers great advantages in doing this. A large (one piece, ball and nozzle) soft rubber syringe,

known as an "ear and ulcer" syringe, whose nozzle fits closely into the open end of the stem of the tube, when filled with fluid, can be used to dislodge anything plugging up the tube.

In the briefest manner possible, I shall report two illustrative cases of very recent date:

CASE 1.—Mrs. K., aged 29, was a mother of a thirteen year old girl by a previous husband now deceased several years. Her present marriage took place about two years ago. She was supposed to be about three months pregnant on November 15, 1927. On November 8th, she did an unaccustomed amount of housework. In the morning she did the "family wash" and worked all day scrubbing and cleaning about the large residence in which she resides. She did not sleep much during the following night. She had pains resembling labor pains and thought she was going to miscarry. She stayed in bed for two days but could not get her bowels to move properly with physic or enemas. She was up and about the house November 10th and 11th but became quite ill about November 12th. She noticed she was running some fever and thought she had been having some for several days. Vomiting occurred a few times and there was pain in the pelvis and rectum.

The patient was first seen on the evening of November 15th. A vaginal examination showed she was exquisitely tender over the vaginal vault. The cervix was lifted well up against the pubes and there was a mass in Douglas' pouch, seemingly wedged between the uterus and rectum. I was somewhat at a loss to make a diagnosis, vacillating between a pelvic abscess and a ruptured tubal pregnancy. The next morning she came to the hospital and I did a laparotomy, enucleating a myoma the size of a small orange from the posterior wall of the uterus, leaving the pregnant uterus in the hope that she might carry the child to term. She was in good condition after the operation but developed post-operative ileus and acute dilatation of the stomach, which became alarming by the evening of November 16th, and a jejunostomy was performed at 1 a. m., November 17th. She stopped vomiting and

did well for two days, when considerable distension occurred in the lower abdomen and I suspected that a loop of the ileum had become adherent and kinked in the pelvis at the site of the myomectomy. I did an ileostomy at 11 p. m., November 19th. The bowels resumed their function November 21st, and both drainage tubes were removed November 23rd. December 18th, she expelled a dead fetus, which probably had been dead since the day she did her housecleaning. It seemed to be about two and one-half months, and since the uterine cavity had remained sealed there was no extraneous infection. She did well and through the agency of the adhesive plaster shingles she did not suffer at any time from a dermatitis of skin.

CASE 2.—Mrs. H. D., aged 30, a Dutchwoman, had been in this country less than two years. She had been married about the same length of time. On March 12, 1928, I was called to her home, two miles from Sibley, to confine her, at which time I found that she had been in labor several hours. I saw her several times during the next twenty-four hours and decided that she was about to experience a difficult and tedious labor. She entered the hospital at 5 p. m., March 14th, and when later it was decided she would have to have a cesarean operation, this was done at 10:30 p. m. An eleven pound male child was born this way.

It was ascertained that she had been very constipated for over a week prior to the onset of labor and there was an impaction. No results being obtained from enemas following operation, distension became alarming, and vomiting commenced and continued. An enterostomy, which was either a high ileostomy or a low jejunostomy, was done March 17th, at 11:45 p. m. From this time on she did well but it took about a week to remove the fecal impaction. The tube was removed the fifth day and the adhesive shingles prevented any dermatitis. She was cheerful and amused herself during her convalescence trying to learn to speak English correctly.

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Note: The tube described in this paper may be obtained from Sharp and Smith, of Chicago. It is listed in three sizes as "Hough's Fenestrated T Tube for Enterostomy."

## A REVIEW OF THE 1928 AMERICAN TOUR OF THE INTERSTATE POST GRADUATE MEDICAL ASSOCIATION\*

ARNOLD S. ANDERSON, M.D.

*Saint Paul*

THE following constitutes a brief summary of some of some of the medical facts and impressions gained at the recent American spring assemblies of the Interstate Post Graduate Medical Association. It might be of interest to mention that this Association is an outgrowth of the Tri-State Medical Association which was organized a few years ago. It has for one of its purposes the arrangement of clinical tours for physicians to the various medical centers of both America and foreign countries. It offers an opportunity obtainable in no other way of gaining access to modern medical knowledge, meeting the leaders of our profession, and of seeing places of historical as well as of geographical interest. The 1928 tour covered the important medical centers of the Southern, Southwestern and Western parts of the United States, Chicago being the starting point and Rochester the end.

Before beginning the tour, while in Chicago, I had the pleasure of visiting the Chicago Municipal Tuberculosis Sanatorium and of learning of their method of dealing with the tuberculosis problem in that large center. The research side of the institution was particularly interesting. A problem of special interest was the work being done on increasing the susceptibility of white rats to tuberculosis. It was found that by placing white rats, which are normally very immune to tuberculosis, on diets deficient in calcium and vitamin D, they were made four to ten times as susceptible to subcutaneous inoculation of tubercle bacilli. It was also found that this acquired susceptibility could be transferred to succeeding generations of white rats. The impression gained from this work was that the diet factor and its relation to disease require a much deeper and more penetrating investigation than they have heretofore been given. I also visited the University of Chicago and learned of the standardization work being done on tuberculin by Drs. Long and Seibert. They have prepared a tuberculin which is fifty times as potent as Old

Tuberculin. One-tenth of a c.c. of the new tuberculin will kill a tuberculous guinea pig. With the proper standardization of dosage, this preparation will undoubtedly play an important rôle in the field of tuberculosis.

After leaving Chicago, the first stop of the trip was at St. Louis. The group was divided into various sections, such as surgical, medical, eye, ear, nose and throat, and pediatrics, depending upon each man's choice of specialty. Due to this necessary arrangement it became impossible for one person to receive all the gems cast forth, so most of this report will have to consist of internal medicine knowledge sprinkled with a bit of each of the others.

The first day in St. Louis was spent at the Washington University Medical School. The second day consisted of clinics at the St. Louis University Medical School. The work on gallbladder presented by Dr. Evarts Graham proved very interesting. He advised against considering that cholecystography showed pathological defects, but rather that it showed functional deficiencies. Failure to obtain a shadow was due to:

1. Failure to concentrate the bile—the most common cause.
2. Blocking of the cystic duct.
3. Impaired secretion of the liver.

Their statistics show that 5 to 10 per cent of gallstone cases became cancers of the gallbladder and inasmuch as the operative mortality was much below 5 per cent a more general application of surgical interference for cholelithiasis was advocated.

Dr. Barr, lecturing on the medical treatment of thyroid disease, stated that the exophthalmic case should be prepared for surgical treatment in the following manner:

The monotony of rest in bed should be combated by one-half hour reading periods, some form of light occupational therapy and after that the use of Lugol's solution, 10 to 15 drops t.i.d., for two or three weeks, after which surgery was indicated. The use of Lugol's solution in about

\*Read at the annual meeting of the Wabasha County Medical Society, held at Plainview, Minn., July 5, 1928.

five minim doses t.i.d. for six months after operation was strongly advocated for cutting down the likelihood of recurrence of symptoms.

Drs. Womack and Cole reported some recent work done on the influence of infection on the thyroid. They found that with a virulent infection in a dog the thyroid gland showed twice the hyperplasia and one-half the iodine content compared to that of the normal animal. Hypertrophy of the gland and decrease of iodine content went hand in hand with any infection. If iodine was administered four to five days before infection, the pathology was decreased and iodine content retained.

Dr. Elman reported a new diagnostic test of pancreatic disease which consisted of a determination of the amylase content of the blood. With obstruction of the pancreatic duct this is increased. With pancreatic disease, a decrease occurs.

Our next stop was at Nashville, Tennessee, where two days of interesting clinics were held. One of the main features of this stay was the surgical clinic on goiter by Dr. Haggard, past president of the American Medical Association.

We spent May 22nd and 23rd at New Orleans. Clinics were held at the Tours Infirmary, Hutchinson Memorial, the Charity Hospital, and Tulane University. Amongst the surgical clinics was one by Dr. Matas, famed for his work on aneurysm. On Tuesday afternoon, a number of short instructive lectures were given on work done at New Orleans by various clinicians and investigators. Dr. Ochsner reported some very commendable work done on bronchiectasis by means of lipiodol injections. He uses it not only for diagnostic purposes, but also for treatment, and cited a number of recoveries resulting. His method is to first cocaine the mucous membrane of the pharynx and then by means of a suitable syringe inject 20 c.c. of lipiodol at a sitting.

Dr. Gage brought fourth evidence from some research work for a method of preventing post-operative adhesions. By means of animal experiments, it was shown that digestive ferments such as papane powder 1-10,000 dilution in normal salt solution applied to the abdominal cavity after operation did prevent the development of adhesions as compared to a large number of controls. They are now observing its action over

a group of patients and will later report the results obtained.

Dr. Turner lectured on the use of yatren for amebic dysentery. The dosage used was 1 gram of yatren t.i.d. for one week, followed by a week's rest and then a repetition of the dose.

The use of liver in pernicious anemia was discussed by Dr. Eshleman and very favorable results were reported. The method of administration was simple. One-third to one-half pound of liver was used per day. It was ground up and administered with equal parts of orange juice. It was very necessary that it be served cold so as not to cause any gastric disturbance.

At the Charity Hospital, a number of pellagra cases were presented. The symptoms experienced in these cases were marked mental depression, erythema, hyperkeratosis and desquamation of the skin on regions of the body exposed to the rays of the sun. The treatment consisted of a wholesome nourishing diet having a high vitamin content.

A number of sprue cases were also presented. The interesting feature of this disease was its close resemblance to pernicious anemia. There were only two features to distinguish it from pernicious anemia and they were failure of fat absorption with a resulting chronic diarrhea and a normal gastric acidity. The blood picture and other signs and symptoms were identical. Medical opinion favored the belief that sprue and pellagra are not necessarily tropical diseases, but are found and should be diligently searched for also in the north.

May 24th was spent at the Baylor Hospital, Dallas, Texas. An interesting feature of the day's clinics was a medical clinic on myxedema by Dr. Homer Donald. He stated that myxedema resulted in an inferior quality of tissue response in general, with a consequent greater susceptibility to colds, lassitude, dyspnea, etc. Cases were presented showing the favorable and gratifying effect of thyroid therapy.

Our next stop was at Los Angeles, where two days of very instructive clinics were given us. Dr. Fishbaugh gave an unusually interesting clinic on the ambulatory treatment of peptic ulcer. Briefly, the method consisted of milk and cream feeding, 8 to 12 ounces every two hours, eight times a day for about six weeks, followed by a soft diet. A mixture of sodium bicarbonate and magnesium oxide was the alkali used and

given about fifteen minutes after each feeding. Unless hospitalization was absolutely necessary, it was found that the ambulatory peptic ulcer case did better than the hospitalized similar one, for as a rule these cases were otherwise physically sound and were much more contented and responsive than if confined to a hospital.

Another bit of interesting information gained at the Good Samaritan Hospital was the work being done on arthritis. Clinical evidence was presented to substantiate the statement that chronic polyarthritis was frequently caused by absorption of bacterial toxin from the colon and so by means of a specially prepared irrigating device called the Schellberg tube the colon was thoroughly cleansed with normal salt solution and an acidophilus preparation introduced. The cases presented strongly attested to the efficacy of the treatment.

Dr. Percy's demonstration of the use of the electric cautery for cancers was another very interesting clinic and impressed us with the fact that the electric cautery is coming more and more to find a permanent place in the surgical field.

San Francisco gave us two days of valuable clinics. It was particularly interesting to hear Dr. Karl Meyer speak on mussel poisoning, a subject which was entirely new to me. It was but a few years ago that an epidemic of mussel poisoning occurred along the Pacific coast and a thorough investigation showed that mussels picked up along the coast during the spring months of the year were the causative factor. At other months of the year, they lacked this particular toxicity. The symptoms produced are very interesting. No gastric distress is manifest, but a peculiar sensation of lightness over the body is experienced as if one were walking in the air. There is a numbness of the lips, a tingling of the finger tips and an ataxic gait, all of which seem to point to a peripheral paralysis. Out of over 100 cases there were six fatalities.

Dr. Woolsey gave a very practical clinic on the use of sodium salicylate for varicose veins. He would inject into the vein 5 c.c. of a 20 per cent solution. The result would be a thrombosis of the diseased part of the vein with a consequent obliteration. A number of cases were presented to show the splendid results obtained.

The day spent in Seattle was given over entirely to sightseeing and no more clinics were

held until the day's stop at Portland. Here ward rounds were made with Dr. Selling at the Multnomah County Hospital and a number of interesting cases were presented. At the Oregon Medical School, work was being done on the effect of pituitrin on the intestinal tract. It was found that, by a subcutaneous injection of pituitrin a few minutes before the oral administration of morphine or strychnine, there resulted a failure of absorption of these drugs with no signs of toxicity following. In some way or other the pituitrin appeared to prevent absorption from the intestinal mucosa.

From Portland, we went to Denver, Colorado, where clinics were held at the University of Colorado Medical School. A heart clinic by Dr. Burnett was held by the method of the Western Electric I-A Stethoscope. By means of this multiple stethoscope arrangement, each one was enabled to listen to the heart sounds of the patient while the instructor called attention to the particular points of interest. It has become a very popular method of teaching cardiac facts to large number of students. Dr. Kemper presented some interesting parathyroid tetany cases and showed the beneficial effects derived from the use of parathormone, calcium, cod liver oil and a meat-free diet.

Two days of clinics were held at Omaha: one day at the University of Nebraska College of Medicine and the second day at St. Joseph's Creighton Memorial Hospital. Very fine clinics were presented and I greatly regret that lack of time and space will not permit a presentation of it all. Summer's lecture on the dilated duodenum, Levine's talk on nutritional diseases and Duffy's work on mutation forms of the tubercle bacillus were but a few of the very interesting subjects presented.

The tour ended at the Mayo Clinic. Here two days of clinics were given us which proved to be the most interesting of the trip. Together with the many surgical clinics, symposia on peptic ulcer, goiter and cholecystic disease were held. The afternoon of the last day was spent at the institute of experimental medicine. In a lecture on pernicious anemia, Dr. Conner made mention of the fact that at the Mayo Clinic they found that a high vitamin diet is as effective as the liver diet for the treatment of pernicious anemia; hence, a liberal diet consisting of meat, eggs,

milk, butter, vegetables and fruits is used. This fact, together with the information gained at the University of Oregon that the cells from chicken blood also stimulate red blood cell formation, leaves us with the view that as yet we do not know the active principle responsible for this particular physiological reaction.

It has been impossible in this brief time to do near justice to the clinical work given on this Interstate Assembly tour. I have attempted only

to present some of the outstanding information gained and to hope that it may have proved of some interest. For anyone interested in obtaining a happy combination of medical material, new, interesting and valuable human contacts, and sightseeing opportunities, I unhesitatingly recommend just such a tour.

In closing I wish to thank you for the opportunity of being with you at this, your sixtieth annual meeting.

THE SMALLPOX SITUATION

For the fifth consecutive year, the United States reported more smallpox cases in 1927 than any other country except India.

According to state reports tabulated by the American Association for Medical Progress, there were 38,498 cases as against 33,343 cases in 1926. Only three states were entirely free from the disease last year—Connecticut, New Hampshire and Vermont. And since the first of the year Connecticut's good record has been broken by an outbreak at Bristol.

The mild type of the disease prevailed generally in the United States, the total number of deaths being 135. According to figures compiled by the Health Section of the League of Nations, England and Wales reported more cases of smallpox (14,767) than all the rest of Europe.

So far as smallpox is concerned about the only thing left for Anglo-Saxons to be proud of is that an English surgeon gave vaccination to the world.

But what of New York State? During 1927 there were 368 cases reported in the State, exclusive of New York City, as compared with 284 cases for 1926. The incidence was considerably higher than in 1925 or 1926, but was much lower than in 1924.

During last year the Commissioner certified to the existence of smallpox in 34 communities. Certifications remained in effect in 11 communities at the end of the year.

The history in regard to vaccination was obtained for all cases reported up-state during the year, with the following results:

Successfully vaccinated within seven years.....	0
Successfully vaccinated more than seven years previously .....	31
Never successfully vaccinated.....	337

These facts show one thing very clearly—the average community waits until an outbreak of smallpox appears before carrying out general vaccination.—*Health News*, N. Y. Dept. Health, July 16, 1928.

# CASE REPORTS

## PAPILLARY ADENOCARCINOMA OF THE KIDNEY\*

### REPORT OF CASE

THEODORE H. SWEETSER, M.D.  
*Minneapolis*

The following case report will emphasize the importance of hematuria and the danger of its neglect.

Mr. F. K., a laborer forty-seven years old, first noticed blood in his urine about three years ago; at the

neither kidney was palpable. There was practically no anemia. The urine contained many red blood cells and a few pus cells.

Cystoscopy disclosed no abnormalities of the bladder or ureteral orifices; no blood was seen coming from either ureter. A pyelogram of the left renal pelvis (Fig. 1), made because of the history of pain in the left flank, showed a deformity suggestive of renal tumor. A pyelogram of the right side (Fig. 2) also was made and ruled out polycystic kidney or other bilateral involvement. As no blood had been seen coming from either ureter, another cystoscopy was done and a second pyelogram of the left renal pelvis made (Fig. 3). In spite of the failure to see blood at the



Fig. 1

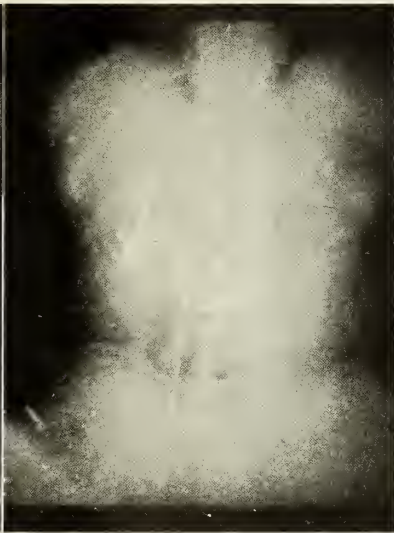


Fig. 2



Fig. 3

onset he had severe pain in his left flank for a few days. He saw several doctors, who examined his urine, made the diagnosis of kidney trouble, and gave electric treatments and various medicines. Unfortunately apparently no further diagnostic measures were carried out. When he was admitted to the General Hospital in April, 1928, he was suffering from intermittent hematuria, which was accompanied by pain in his left side when clots were passed. Urination was unobstructed. His appetite was poor, and he thought he had recently lost about fifteen pounds in weight. His past history disclosed nothing relevant to the present illness.

Physical examination showed no abnormal findings;

ureteral openings, a diagnosis of left renal tumor was made, based on the history and the appearance of the pyelograms.

When removed, the kidney (Fig. 4) contained two tumor nodules. The larger was a solid, yellowish-gray, soft, partly degenerated tumor about one inch in diameter, midway between the poles, impinging on the pelvis and also causing a bulging of the renal capsule; grossly it did not invade the perirenal fat. The smaller nodule was about one-half inch in diameter extending from the renal tissue into the peripelvic fat in the hilum. Several old blood clots and a small calculus were found in the lower calyx. Microscopic examination of the tumor showed it to be a papillary adenocarcinoma (Fig. 5). After the operation, the wound

\*From the Urologic Service of Drs. Owre, Kremer, Everlof, and T. H. Sweetser, Minneapolis General Hospital.

## POLYCYTHEMIA TREATED WITH PHENYLHYDRAZINE HYDROCHLORIDE\*

REPORT OF CASE

E. V. ALLEN, M.D.  
 Rochester, Minnesota



Fig. 4

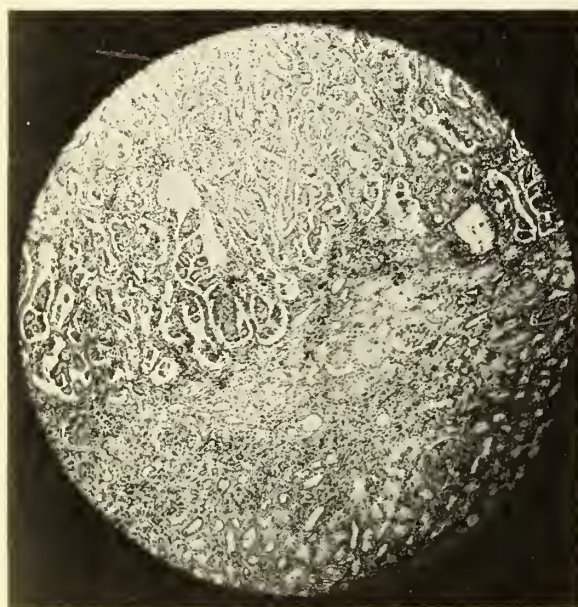


Fig. 5

healed promptly and the man left the hospital feeling well.

The prognosis is made decidedly less favorable by the extension of the tumor into the peripelvic fat.

A case of this kind teaches the lesson that hematuria should not be treated without definite determination of its cause if possible, a complete urologic examination being usually necessary.

*Gentian Violet Capsules-Swan-Myers, 1 grain.*—Each keratin coated capsule contains gentian violet medicinal (New and Non-official Remedies, 1928, p. 172) 0.65 Gm.; with lactose. Swan-Myers Co., Indianapolis.

The patient, an accountant aged fifty-six, entered The Mayo Clinic in August, 1927, complaining of frontal headache, abdominal distress, insomnia and red hands and face, of four years' duration. The headache occurred daily and lasted throughout the day. The abdominal distress, which was dull and burning, was difficult to localize but appeared to be mostly in the right lower quadrant. The distress occurred irregularly, being present for three or four days and disappearing for a like period only to recur. Usually it was present all day, but occasionally it was more accentuated two to three hours after meals; it was not relieved by food or soda. The patient was awakened at night by noises and was unable to go back to sleep. The past history did not contain anything of significance except that four years previous to admission some teeth had been extracted as a remedy for vague rheumatic pains. Such severe hemorrhage followed some of the extractions that a year was required for the extraction of all teeth; following this the symptoms were much relieved but returned in three or four months.

General examination at the time of admission was essentially negative except for manifestations usually associated with polycythemia vera. Fingers, hands, face and mucous membranes were reddish-purple. The conjunctiva was markedly injected. The examination of the fundus showed marked cyanosis. The spleen descended about 2 cm. below the costal margin. The liver was slightly enlarged. The radial arteries were thickened, graded 1 to 3. The erythrocytes numbered 7,000,000, the leukocytes 11,700 for each cubic millimeter of blood; the differential proportion of the leukocytes was normal. Viscosity of the blood was 13 (normal 4.5). The hematocrit showed the whole blood was 68 per cent cells (normal 42 per cent). The blood volume by the dye method was 166 c.c. for each kilogram of body weight (normal 90 c.c. for each kilogram). Coagulation and bleeding times were normal. Urinalysis was essentially negative except for albumin graded 1. The phenolsulphonphthalein test showed return of 60 per cent in two hours. The blood urea was 23 mg. for each 100 c.c. A test of the hepatic function by the dye method showed absence of dye retention. The serum bilirubin was 1.3 mg. per cent (indirect van den Bergh). The systolic blood pressure was 180 and the diastolic 120. The diagnosis was polycythemia vera and essential benign hypertension.

The patient was sent to hospital and given a total of 4.6 gm. of phenylhydrazine hydrochloride in a period of twenty-four days. At the end of this time the

\*Case reported in Staff Meeting of the Mayo Clinic. Published in Proceedings of the Staff Meetings of the Mayo Clinic, 1928, iii, 199-201.

erythrocytes numbered 4,450,000 for each cubic millimeter of blood. The viscosity of the blood was 5.2. The hematocrit showed the whole blood was 47 per cent cells. The blood volume was 125 c.c. for each kilogram of body weight. As a result of this treatment there was absolute relief from the abdominal distress, headache and insomnia. The redness of the face and hands was markedly lessened and the patient's general health was improved. Because of the necessity for continued treatment in an attempt to control symptoms, he was sent home and advised to go about his usual occupation and to take 0.3 gm. of phenylhydrazine weekly. In the Clinic it was originally believed that the ideal dosage was one which would keep the number of erythrocytes at approximately normal. The patient, however, learned to determine the necessary dosage, depending on his symptoms. The ideal amount was found to be that which would keep the number of erythrocytes at about 5,500,000; when the erythrocytes dropped much below this level, weakness, unsteadiness and palpitation developed, and when the number rose above this level the previous symptoms returned. In a period of ten months the erythrocytes were counted twelve times; the counts varied from 4,500,000 to 5,500,000, averaging roughly 5,250,000. The patient remained free of symptoms and was able to engage in his active occupation without discomfort, whereas prior to treatment he had carried on his work with great difficulty and at times was almost disabled.

He now returns to the Clinic ten months after the beginning of the treatment, apparently in good health. Erythrocytes number 5,000,000, and leukocytes 6,200 for each cubic millimeter of blood. The differential count is normal. The viscosity of the blood is 5.4. The phenolsulphonephthalein test shows a return of 50 per cent in two hours. Urinalysis is negative except for albumin, graded 1. A test of hepatic function by the dye method shows absence of dye retention. The indirect van den Bergh test shows the serum bilirubin to be 1.9 mg. per cent. The blood urea is 44 mg. for each 100 c.c. of blood. The systolic blood pressure is 160 and the diastolic 104.

#### SUMMARY

In a case of polycythemia vera, which probably had existed four years before the patient's admission to the Clinic, active treatment was carried out in the hospital and later at the patient's home for ten months, while he was going about his usual occupation. The symptoms of headache, abdominal distress and insomnia were completely relieved as a result of treatment, which consisted of 4.6 gm. phenylhydrazine in a period of twenty-four days in the hospital and at home a dosage varying from 0.2 to 0.3 gm. weekly. The patient was able to regulate the drug to the correct amount to keep him free of symptoms. After ten months of such treatment it was not possible to find evidence of increased renal, hepatic or general systemic injury as a result of treatment. The blood pressure is lower than at his first admission. This case illustrates nicely the efficacy of prolonged treatment of polycythemia vera with phenyl-

hydrazine if carried out with the intelligent coöperation of the patient.

#### DISCUSSION

H. Z. GIFFIN, M.D., Division of Medicine: Dr. Allen and I want to speak tonight not only of the good results from the treatment of polycythemia vera by phenylhydrazine but to mention some of the untoward results. In the last three years there have been under observation, mostly on Dr. Brown's service, thirty-seven patients. Of these, six were not treated, chiefly because of arteriosclerosis, age, and advanced visceral changes. Of the thirty-one remaining I think we can say that twenty-five are doing very well: they are practically relieved of symptoms and able to work a good deal of the time or all the time; they have been able, like this patient, to regulate the dosage according to symptoms.

As to untoward results, in the thirty-seven cases there have been two types of serious results: rapid hemolysis caused by the drug, and thrombosis. In one case the erythrocytes showed rapid hemolysis, dropping from 6,000,000 to 2,000,000 in a few days on small dosage; this was a very advanced case of arteriosclerosis, myocardial disease and nephritis. We would not now attempt treatment with phenylhydrazine in such a case. The patient died in uremia. In two cases of extensive thrombosis following treatment, thrombosis had existed before, but the tendency to thrombosis following treatment with phenylhydrazine must be regarded seriously. Untoward results have not followed subsequent courses of the drug, that is, after the patient has gone home.

Experience has taught us to use the following precautions. If patients are bedridden they should not be given phenylhydrazine. Somewhat as a corollary to this, we believe that treatment is best carried out on an ambulatory regimen and if it is necessary to keep the patient in the hospital he should be allowed to be up and around. We are very cautious about treating patients aged more than sixty, because they are very likely to have advanced arteriosclerosis as a result of the polycythemia vera. We are very careful about treating patients who have shown evidence of thrombosis. It is probably all right to treat them if the thrombosis is mild and peripheral, which is common with polycythemia vera, but treatment should certainly be carried out cautiously. Originally we gave doses as high as 4 or 5 gm. during a period of ten days or two weeks so as to produce definite anemia. On the patient's dismissal we advised him on the basis of the erythrocyte count to repeat the original dosage. With increasing experience we have modified this dosage. The initial dose now does not exceed 3 to 3.5 gm.; frequently half this is sufficient to relieve symptoms and cause a moderate reduction in the number of erythrocytes. Subsequent dosage is based on symptoms rather than on the number of erythrocytes. Small intermittent doses of 0.2 or 0.3 gm. every week or ten days are usually sufficient to control the symptoms. Every case is an individual problem in the establishment of the dosage. The success of treatment has been largely related to the intelligence and coöperation of the patient.

## President's Letter

**I**N the September number of MINNESOTA MEDICINE are published the transactions of the House of Delegates. Every member of the association ought to read them carefully, particularly the reports of the committees. The committee reports represent, to a large extent, the result of the year's activities of the State Association.

The State Medical Association is a service organization and its present activities are largely directed along the following lines:

1. For promoting postgraduate instruction—after all, most of our troubles are due to lack of knowledge. Read the report of the committee on Hospitals and Medical Education. I might add that six new courses are being arranged for now in various parts of the State.

2. The State Association is actively interested in protecting the public from ill-advised legislation, defining the qualifications to practice healing and also safeguarding the legal rights of the practitioner.

3. We are told that a large percentage of the population is ignorant of the value of scientific medicine but people are relying on patent medicine, quacks and charlatans for help in illness. The committee on public health education has spent a lot of time trying to establish proper contacts for the dissemination of sane information about health. Read about it. The Radio Committee has been sponsoring radio health talks.

4. There is also a new committee on State Health Relations, studying the various activities, federal, state and county, that the members may be informed and that there may be better coöperation.

5. The Historical Committee is writing the history of the State Medical Association.

All these committees have spent a lot of time on their work and their reports are unusually well done. They would all welcome constructive criticism from the members of the association. The secretary's report gives a brief summary of the work of this office. If you read this number of MINNESOTA MEDICINE carefully, I think you will agree with me that the State Medical Association is a service organization.

*C. B. Wright*

# EDITORIAL

## MINNESOTA MEDICINE

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## Insanity as a Defense for Crime

How preposterous it would be to submit to a jury of average intelligence the diagnosis of pneumonia, their judgment to be formed from the testimony of lawyers, doctors and the laity! How greatly would their diagnosis be assisted by the prejudiced and passionate pleas of antagonistic lawyers! How much more preposterous is the submission of the diagnosis of insanity, a still more complicated and confusing condition. The absurdity of such a process is evident.

The recent defense of atrocious crimes on the ground of mental disease has brought, not only the psychiatrists, but also the processes of the

courts, into bad repute. It has become the refuge of every scoundrel who has money enough to pay for adroit lawyers, and for the complaisant doctors who play into their hands. The more horrible the crime, the greater the evidence of mental disease.

From a legal point of view, crime and insanity are widely separated. Society, in establishing courts, seeks to protect itself from those who threaten its integrity. It is not concerned with the individual, but is interested solely in the welfare of the group. It is indifferent whether the one who breaks its laws does so from vicious inclination or from disease of the mind. Its duty is to protect itself against the asocial and antisocial elements. The courts are concerned solely with the question of the guilt or innocence of the accused.

In the defense of a criminal, facts are brought out which tend to prove innocence of the accused, or circumstances tending to lessen or absolve from responsibility. When insanity is not alleged as a defense, the courts are quite capable of determining the question of the guilt or innocence. When disease of the mind is alleged, neither the law on the statute books, nor the judge, nor lawyers, nor the jury are competent to decide what is purely a medical question.

The two issues should never be combined. Where it is alleged that the accused is insane at the time of trial, the matter should be referred to a commission to determine if the mental disease was of such a character that the accused could not understand the nature of the charge against him, nor prepare his defense. If he is insane to the degree that he cannot plead, he should be committed to a hospital until he sufficiently recovers to conduct his defense.

If it is alleged that he was insane at the time of the commission of the crime, but has recovered his reason at the time of the trial, no jury can properly make a diagnosis of his state of mind and the trial should be concerned solely with the facts that tend to prove or disprove his guilt. After his conviction, and before sentence is pronounced, he should be confined in a hospital for the insane for a sufficiently long period to allow

a commission of psychiatrists to observe and study his alleged mental disease, with the power to summon witnesses to testify as to the symptoms of insanity before and at the time of the commission of the crime.

With the knowledge obtained by a disinterested commission of psychiatrists, the responsibility of the accused at the time of commission of the crime could be accurately determined. A report by the commission to the trial judge would then give him the information as to the existence of mental disease, and the prisoner could either be sentenced to the state's prison, could be acquitted on the ground of mental disease, or confined in a criminal insane asylum at the discretion of the court.

The defense of insanity has fallen into disrepute, because the law recognizes only the knowledge of right and wrong as the test of responsibility. Psychiatrists do not accept mere knowledge of right and wrong as a proper test. Knowledge is a variable term. A farm hand and a college professor do not know the same thing in the same degree. One man's knowledge differs from that of another, and a test of responsibility based upon that alone is not valid. Psychiatrists realize that when the mind is diseased the whole personality suffers, and that inhibition is lowered while emotional stress is exalted.

Another cause of disrepute of the defence of insanity is the willingness of lawyers, when defending offenders with large financial resources, to befog and befuddle the court and jury by adroit misrepresentation of the issues, by setting up a hypothetical insane man for the analysis of the physicians, rather than fairly to try the issue as to the man at the bar. Insanity is on trial, but not the prisoner, and the dull witted jury cannot see the difference.

Most glaring of all faults is the willingness of the doctors to act as quasi advocates of one side or the other. They lend themselves, consciously or unconsciously, to the service of the adroit lawyers, who, not seeking justice, want to win a verdict by fair or foul means.

If the facts that tend to prove or disprove a crime are the only things a jury has to consider, they are competent to try the issue. They should never be asked to decide a question which at times puzzles the most learned psychiatrists. Let

the crime be proven, and let the prisoner, while in a prison or criminal insane asylum, have his mental condition determined by a skilled commission of psychiatrists. Then the judge, with a full knowledge of the responsibility of the accused, can impose a just and adequate sentence.

What would be gained by this method? The time and expense of the trial would be lessened, and the guilt or innocence of the accused would be established by a tribunal competent to decide the issue. What would the accused lose by this system? He could lose nothing, because his responsibility would be determined by a competent commission after thorough study of his mental reactions, free from the conflicts of hired and prejudiced alienists. The safety of society should alone be considered, and the individual should be made to submit to fair and scientific tests that will result in the attainment of justice.

ARTHUR SWEENEY, M.D.

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### The Gorgas Memorial

The Gorgas Memorial Institute of Tropical and Preventive Medicine has received considerable publicity since its foundation a few years ago but the nature of its activities is little known. The name adopted suggests that its activities are to be limited to the study and prevention of tropical diseases only. The research work of the institute is an important function of the organization and has been made possible through the passage at the last session of Congress of a bill appropriating \$50,000 annually for the maintenance of a Gorgas Memorial Laboratory in Panama. The first payment on this yearly budget was authorized for July 1, 1928, and the Scientific Board of the Memorial, of which Dr. Richard Strong of Harvard is the chairman, is at present making a study of the problems involved and definite plans will soon be announced. As the work of this Memorial Laboratory is of international interest, some twenty South and Central American countries are being asked to make pro rata contributions to the project.

It is of interest to note that the preventive character of the Memorial has been expanded to the extent of carrying on a publicity campaign in the interests of scientific medicine. Articles on health subjects written by some 2,500 medical

writers now appear daily in several hundred newspapers and reach practically every city and town in the country. The aim of the articles is to disseminate authentic information about health and scientific medicine. The value of the periodic health examination by the family physician is stressed, a type of activity which the profession is scarcely in a position to undertake.

As an added feature of health education a unique plan of sending out "caravan" speakers to different cities and towns has been adopted. By this plan speakers, some of them laymen, are appearing before Rotary, Kiwanis and luncheon clubs as well as schools and colleges and women's organizations with health talks of interest to these audiences. So far this undertaking has been limited largely to the states of Michigan, Illinois, Iowa and Minnesota but will be extended to cover the entire country. Local units of the Memorial are being organized in the various cities reached by the "caravan" which, while largely lay in character, are officered by representative doctors and whose principal platform is the periodic health examination. Thus far units have been formed in the Minnesota cities of Winona, Mankato, Faribault, Albert Lea, Austin, Saint Paul, Minneapolis, Saint Cloud, Duluth, and Brainerd.

It would seem that an institute like the Gorgas Memorial would be particularly well adapted to carrying on educational work of this sort—a kind of work which the organized profession for various reasons, modesty perhaps as much as anything else, has been backward in undertaking.

### Fraudulent Advertising

Frauds may be perpetrated so much in the open that we grow accustomed to them and, like so many evils, we first pity, endure, then embrace. This applies to a certain type of advertising. The majority of advertising is honest in its claims. Some is in the twilight zone between honesty and frank fraud. A certain very appreciable percentage is obviously fake. It has been estimated that dishonest advertising yearly costs the public in this country over \$500,000,000. Why do we as a people tolerate this gigantic fraud?

It is obvious that the publisher has a very definite responsibility in this matter of dishonest claims in advertising. The claim of some publishers that they have no way of checking each submitted advertisement does not hold in most instances. It is true that this is a free country—very free in many ways—and private enterprise should be given a chance. There is no reason why crooks should be abetted in fleeing the public.

A few publishers have seen the light and accept authentic advertisements only. MINNESOTA MEDICINE, we are proud to state, has followed this policy from the very beginning and only occasionally has an unreliable advertiser gained admittance to our advertising pages. In order to carry out such a policy close coöperation has been necessary between the editorial and business management of the journal.

The business side of a publication is too much influenced by dollars and cents and adopts a policy on the assumption that in advertising honesty is not the best policy. They forget the impression that an intelligent reader obtains from a paper which in its editorial column repeatedly stresses honest government and politics, lays bare a scandal in one column and in the next runs a patently dishonest advertisement. It is obvious that a newspaper, for instance, which is honest throughout its columns is more likely to possess public confidence and to mould public opinion.

The Federal Trade Commission of Washington recently took steps to obtain the views of publishers with reference to holding a trade practice conference for publishers of periodicals to take up the matter of honest advertising. The trouble is that conscientious publishers have already adopted honest advertising policies and are not desirous of spending their energies in an effort to reform others. The dishonest publisher naturally wishes to avoid agreements not conducive to what he believes his financial interests.

Legal action taken against a publisher as a party to a suit instituted against a fraudulent advertiser might have a wholesome corrective effect on the practice in general. Public opinion, however, is an even more powerful corrective force.

# ❧ COMMITTEE ON PUBLIC HEALTH EDUCATION ❧

## The Public Relations of the County Medical Society

"We have heard a great deal in the last two years relative to the value and need of approaching the public. We have been criticised within the profession, . . . if we cannot work with the public, it seems to me then our work is through." Rogers.

The following are summarized reports of the Public Health Activities in two of our county societies:

### HENNEPIN COUNTY MEDICAL SOCIETY

The Public Health Committee of the Hennepin County Medical Society as at present constituted was organized February 16, 1928. It consists of twenty-five members representing the general practitioners and various specialties of the society, and so chosen also as to represent twelve leading private hospitals and the city and state institutions. Except during the vacation season meetings are held every other week.

The work and aims of the committee are outlined by the committee itself about as follows:

First, coöperation with the newspapers of the city in the matter of censuring of items of medical news or interest.

Second, supplying to the papers authentic medical news which might have a legitimate interest to the public.

Third, the establishment of relations with lay health organizations and social agencies in order that the society may be able to criticize constructively and aid in their work.

Fourth, ethical promulgation of the interests of the profession with due regard to the paramount interests of the public.

Early in the work, the Minneapolis Civic and Commerce Association asked us to review the private hospitals, and medical and surgical facilities of the city, furnishing them with data for an article in their Journal which was printed in May. Reprints of this article were ordered and distributed to visiting physicians at the American Medical Association Convention from the Northwest states. Other copies were pro-rated to the various hospitals for distribution to patients from outlying communities.

The medical societies of the city have been surveyed, and the data obtained in this survey kept for reference.

A class for training in public speaking was organized among the members of the society with a large enrollment, the results of which we hope will be of great value in our future work.

The papers have shown an increasingly active interest and have on many occasions solicited our aid in the preparation of articles and features.

J. A. WATSON, Chairman,  
Publicity Committee.

### SAINT LOUIS COUNTY MEDICAL SOCIETY

Activities of the Saint Louis County Medical Society during the past year have been mostly preliminary to the work that we expect to carry on next year. A good deal of effort has been used in selling the proposition to the profession.

We have organized a speakers' bureau. During the next year we expect to supply a large number of speakers before many organizations, especially for the Parent-Teachers Association. They have been in the habit of having one talker on some health subject every year. We have agreed to supply them with speakers during the next year. Our members have spoken before quite a few luncheon clubs and Parent-Teachers meetings during the past year.

Contact has been made with the daily papers of Duluth and they understand that they are privileged to come to our committee at any time for information on medical subjects. They have made quite free use of this privilege so we have supplied them with considerable material. All our society meetings have been written up in the daily papers and we have furnished them with a short write-up, stressing the things that would interest the public.

Members of our committee have attended the state meetings at Saint Paul and Minneapolis and have given reports to the local society following these meetings.

A member of our society was elected on the school board last year and has just been re-elected for the coming year.

F. H. MAGNEY, Chairman.  
Local Publicity Committee.

## REPORTS AND ANNOUNCEMENTS OF SOCIETIES

### SOUTHERN MINNESOTA MEDICAL ASSOCIATION

The annual meeting of the Southern Minnesota Medical Association is scheduled to be held at Rochester, Minnesota, Oct. 2 and 3, 1928. Since the State Association held no scientific session this year an effort is being made to arrange a particularly attractive program. Titles and abstracts of papers have already been requested by Dr. A. M. Snell, Mayo Clinic, Rochester, chairman of the Program Committee.

### AMERICAN COLLEGE OF SURGEONS

The American College of Surgeons will hold the eighteenth Clinical Congress in Boston, October 8 to 12. Headquarters will be at the Statler Hotel and meetings will be held in the ball room of the Copley-Plaza Hotel and Symphony Hall.

The Hospital Standardization Conference will be held in morning and afternoon sessions in the ballroom of the Copley-Plaza Hotel Monday, Tuesday, Wednesday, and Thursday. An innovation this year will be the commencement of the clinics in the Boston hospitals on Monday afternoon, continuing through the mornings and afternoon of the following four days.

Monday evening's program will include an address of welcome by the local Chairman, the address of the retiring President, Dr. George David Stewart, New York, the inaugural address of the new President, Dr. Franklin H. Martin, Chicago, and the John B. Murphy oration on surgery by Professor Vittorio Putti of Bologna, Italy.

Tuesday, Wednesday and Thursday evenings' sessions will be held in the ballroom of the Copley-Plaza Hotel. At the Wednesday evening meeting the visiting surgeons will be the guests of the Boston Surgical Society at a special meeting, when the Bigelow medal is to be awarded. On Friday evening the Annual Convocation of the College will be held in Symphony Hall, when the 1928 class of candidates for Fellowship in the College will be received. The fellowship address on this evening will be delivered by Dr. William J. Mayo.

The annual meeting of the Governors and Fellows will be held Friday afternoon and will be followed by a symposium on Traumatic Surgery to be participated in by leaders in industry, labor, indemnity organizations and the medical profession.

Ether Day will be celebrated in the Dome Room of the Massachusetts General Hospital on Friday, when a bronze bust of William T. A. Morton will be presented to the hospital. It was in this building that ether was first administered for the production of surgical anesthesia on October 16, 1846.

Several newly completed medical motion pictures produced under the supervision of the American College of Surgeons and approved by it will be shown during the Congress.

Reduced fares on the railways of the United States and Canada have been authorized to those holding a convention certificate so that the total fare for the round trip will be one and one-half the ordinary first class one-way fare.

Other outstanding features will be the exhibits. In addition to the commercial exhibits the departments of the College will present scientific exhibits. A number of distinguished foreign guests of international reputation have signified their intention of attending.

The Chairman of the Boston Committee on Arrangements is Dr. Frederic J. Cotton.

### INTERSTATE POST GRADUATE MEDICAL ASSOCIATION OF NORTH AMERICA

The annual Interstate Assembly will be held this year in Atlanta, Georgia, October 15 to 19 inclusive. All members of state or provincial associations are invited to attend and will receive complete programs some four to six weeks in advance of the meeting. The program committee, of which Dr. George W. Crile is chairman, lists a number of addresses by prominent members of the profession from the British Isles and Switzerland in addition to the names of many of the best known medical authorities in Canada and the United States. The meeting promises to equal in quality and interest the high standard set by previous meetings.

### CLINICAL CONGRESS OF PHYSICAL THERAPY and SEVENTH ANNUAL MEETING AMERICAN COLLEGE OF PHYSICAL THERAPY

Announcement is made of the third clinical Congress on Physical Therapy in conjunction with the seventh annual meeting of the American College of Physical Therapy, to be held at the Hotel Stevens, Chicago, October 8 to 13, 1928. For the past year plans have been under way to make this 1928 Congress the most interesting one ever conducted, and one which will be difficult to surpass in the future.

The scientific addresses to be presented will come from leading European and American authorities on the basic and practical phases of physical therapeutics. Symposiums on Cancer and Tuberculosis, the newest scientific information in these fields, should attract physicians from all sections. Sectional meetings in medicine, surgery, and allied branches, and in eye, ear, nose, throat and oral surgery will be of interest to specialists in their respective fields, and for those who are new in physical therapy, special instruction classes in the physics and practical application of the various physical agents have been arranged.

Dr. Carl Sonnc of the Finsen Medical Light Institute, Copenhagen, Denmark; Cav. Prof. Dr. Donato de Francesco of Venice, Italy; and Dr. A. R. Friel of London, England, will expound the results of their per-

sonal investigations in their respective specialties, while over one hundred leading physicians and teachers from all parts of North America will complete a program that cannot help prove inviting to every worker in physical therapy.

Physicians, their non-medical assistants and technicians, and hospital executives properly vouched for, are invited to attend all sessions, for which only a nominal registration fee will be charged.

Program, registration card and other information may be obtained by writing the American College of Physical Therapy, Suite 820, 30 North Michigan Avenue, Chicago, Illinois.

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## OF GENERAL INTEREST

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Dr. J. M. Arnson, formerly of Minneapolis, is now located in Benson, Minnesota.

Dr. Marion O. Mead, formerly of Minneapolis, is now a member of the staff of the Bismarck Hospital, Bismarck, North Dakota.

Dr. C. J. Goodheart has disposed of his practice in Saint Paul and is now practising his profession in South Gate, California.

Dr. C. I. Reddick, who has been with the Mayo Clinic in Rochester, is now physician on the S. S. President Grant of the American Mail Line, sailing from Seattle, Washington.

Dr. L. Minor Blackford, following a period of four years' association in the Mayo Clinic, Rochester, Minnesota, has opened offices for the practice of medicine at 202 Medical Arts Building, Atlanta, Georgia.

Announcement has been received from Dr. A. M. McKeithen, formerly of Rochester, Minnesota, of the opening of offices at 718 Heyburn Building, Louisville, Kentucky, for the practice of surgery and surgical diagnosis.

Dr. Hilding Berglund, chief of the medical staff, University of Minnesota, left in July for Peking, China, where he will act as visiting professor of medicine during the next academic year, under the Rockefeller Foundation, at the Peking Union Medical College.

Dr. George Hagaman and Dr. Alexander Stewart, formerly associated with Dr. Walter Ramsey in the Children's Clinic, Saint Paul, are now practicing pediatrics independently. Dr. Hagaman has opened a new office at 448 Lowry Medical Arts Building, St. Paul.

Dr. William C. Bernstein, University of Minnesota, 1928, who took his internship at Ancker Hospital in Saint Paul the past year, is practicing in New Richland, Minnesota, having purchased the equipment of Dr. Drand O. Leopard, who will enter the Philadelphia Post Graduate School in Surgery this fall.

Miss Irene Goette, who has rendered valuable service as librarian of the Ramsey County Medical Society, Saint Paul, for a number of years, and Mr. F. J.

Saam of Saint Paul, were united in marriage, May 25, 1928. Mrs. Saam recently resigned her position as librarian. Her successor is Miss Eleonore Berger.

Dr. J. H. Saint of Rochester, Minnesota, has received word that he has been awarded the Health Scholarship of the University of Durham, England, for 1928, for his thesis on "Surgery of the esophagus." The experimental work was carried out at the Institute of Experimental Medicine under Dr. F. C. Mann. This scholarship, founded by the bequest of a former professor of the university, is awarded every two years, and is of the approximate value of \$1,000.

The Minnesota Society of Internal Medicine is offering a prize of \$250.00 for the best work presented to the Society during 1928. The prize is awarded to the practicing physician, exclusive of members of the Society in the State of Minnesota, who has been deemed most worthy to receive a prize in research in clinical medicine. Theses will be received by the secretary, Dr. Edwin L. Gardner, 610 Yeates Building, Minneapolis, Minnesota, up to October 1, 1928.

At the annual conference of State and Provincial Health Authorities of North America, held in June of this year in Saint Paul, Dr. Matthias Nicoll, Jr., Commissioner of Health of New York State, was elected President; Dr. W. M. Dickie, Director State Department of Health of California, was elected Vice President, and the following were elected members of the Executive Committee: Dr. A. C. Jost, Provincial Health Officer of the Province of Nova Scotia; Dr. John Monger, Director of Health of Ohio; Dr. Stanley Osborn, State Commissioner of Health of Connecticut, and Dr. I. D. Rawlings, Director of Public Health of Illinois.

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## TRUTH ABOUT MEDICINES

*Paroidin.—Parathyroid Extract—Hanson.*—An aqueous solution containing the active principle or principles of the parathyroid gland of cattle and having the property of relieving the symptoms of parathyroid tetany and of increasing the calcium content of blood serum. It is standardized by its capacity to increase the blood serum calcium in parathyroidectomized dogs. Paroidin is of pronounced and definite value in the treatment of tetany. To guard against the serious consequences of hyperthyroidism, excessive doses of paroidin must be avoided and large doses of the preparation must not be administered without estimation of the blood serum calcium. Paroidin is marketed in 5 c.c. ampules, each c.c. containing 150 Hanson units. Parke, Davis & Co., Detroit.

*Capsules Ephedrine Hydrochloride—Pemco, ¼ grain.*—Each capsule contains ephedrine hydrochloride—Pemco (New and Non-official Remedies, 1928, p. 176) ¼ grain. Prophylacto Mfg. Co., Chicago.

*Capsules Ephedrine Hydrochloride—Pemco, 0.3 Gm.*—Each red capsule contains ephedrine hydrochloride—Pemco (New and Non-official Remedies, 1928, p. 176) 0.3 Gm. Prophylacto Mfg. Co., Chicago. (Jour. A. M. A., July 7, 1928, p. 28.)

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## OBITUARY

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### Dr. Hugh Reynolds

Dr. Hugh Reynolds of Hibbing, Minnesota, died Saturday, June 30, 1928, at his home following a three weeks' illness. He was 40 years old.

Dr. Reynolds was a graduate of the University of Minnesota of the class of 1914. He went to Hibbing in 1915 and outside of the period of the war, when he was in service, he made his residence there. For fifteen years he had been associated with the Adams Hospital as children's specialist and in that time he had won recognition in this particular field.

Dr. Reynolds held offices in various organizations. He was vice president of the Rotary Club and one of its charter members. He was a director of the public golf course association and an active member of the Mesaba Country Club. He was active in Masonry and other fraternal orders.

Dr. Reynolds was one of the first men to enlist in the service from Hibbing during the World War. He joined the colors Oct. 12, 1917, going to Fort Benjamin Harrison, Ind. He was transferred to Field Hospital No. 35, Fort Oglethorpe, Ga., and was with the Seventh division, Three Hundred and Third medical detachment, supply train when that unit went overseas. He served during the various campaigns to the end of the war, when he was mustered out at Camp Dix, New Jersey, June 14, 1919.

Dr. Reynolds is survived by his widow; two children, a boy and a girl; his mother; three brothers, Dr. O. H. Reynolds of Hibbing; Eugene, who lives in Washington; William, who lives in Minneapolis; and a sister, Miss Marguerite, who is a teacher in Hibbing.

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### Dr. William Doms

Dr. William Doms, for twenty-six years a practicing physician at Woodstock, Minnesota, passed away at his home July 21, 1928, following a short illness. Death was due to erysipelas and influenza.

William Doms was born July 15, 1858. He was married to Anna Ingle, at Rochester, March 19, 1879, and in October of that year they moved to Pipestone county, taking a homestead. Twenty-six years ago they moved to Woodstock, where on March 31, 1925, Mrs. Doms passed away as the result of burns received when a stove exploded at their home.

Dr. Doms has at various times held county offices. He was county coroner several years ago, and at the time of his death was a member of the Board of County Commissioners. He was a candidate for reelection.

Dr. Doms is survived by his second wife and nine children.

## PROGRESS

Abstracts to be submitted to Section Supervisors.

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Members are urged to abstract valuable articles which they run across in their reading and send the abstracts to the physicians in charge of the respective sections. In order to avoid duplication it would be well to communicate with one of the section supervisors before the article is abstracted.

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## SURGERY

### SUPERVISORS:

DONALD K. BACON,  
LOWRY BLDG., ST. PAUL

VERNE C. HUNT,  
MAYO CLINIC, ROCHESTER

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**MORTALITY FACTORS IN ACUTE APPENDICITIS:** Eldridge Lyon Eliason, M.D., and L. K. Ferguson, M.D. (Ann. of Surg., July, 1928, 65-79. Vol. LXXXVIII, No. 1). The authors direct attention to the many excellent articles on the subject of acute appendicitis, prior to 1915, and the scarcity of such articles since that time. Associated with the latter, vital statistics show the mortality of this disease in the United States has risen 31 per cent since 1915.

A patient exhibiting persistent colicky pain followed by nausea and vomiting, localized tenderness and rigidity and tachycardia should direct one's attention to surgery.

Sixty to 70 per cent of the cases studied in this series of 675 cases presented atypical symptoms. This leads to difficulty of diagnosis, which means in turn delay. Delay is shown to increase the mortality enormously, chiefly because of abscess, peritonitis and intestinal obstruction. The operative mortality in this series was 5.5 per cent. Peritonitis was the greatest factor in the mortality, and intestinal obstruction was second.

JOHN R. HAND, M.D.

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**THE SURGICAL PATHOLOGY OF TUBERCULOUS DISEASE OF THE URINARY TRACT:** Henry Wade, Edinburgh (The Irish Journal of Medical Science, Series VI, No. 30, June, 1928, pp. 245-258). The author reviews 56 cases of urinary tract tuberculosis. The average age incidence was approximately 30, the duration of symptoms previous to medical consultation 2 years and 5 months, and the outstanding complaint was frequency of urination. Tuber-

cle bacilli were found in the urine of 26 cases, and tuberculous foci elsewhere in the body were demonstrable only in 6 cases.

From a diagnostic standpoint, *x*-ray pictures of the kidneys, ureters and bladder frequently revealed areas of renal calcification. Cystoscopic examination showed a contracted bladder orifice. Pyelograms at times revealed a filling defect of part of the renal pelvis due to cavity formation, whereas the remainder of the pelvis had normally filling calices. Ureterograms showed irregular dilatation of the channel with very irregular outline. Bilateral catheterization was employed routinely and in those cases where the ureteral orifices were obscured by marked cystitis, intravenous indigo-carmin was injected for purposes of localization. When the above methods could not be employed to obtain a definite diagnosis, an exploratory operation was advised. A posterolateral incision over the presumably well kidney was performed, and then by means of a small transperitoneal opening, the suspected kidney was examined. If found to be diseased, it was removed later.

Nephrectomy was employed in all cases of unilateral tuberculosis, and wounds were closed with drainage which was removed in 48 hours.

Operative mortality was 2 per cent, the average stay in the hospital 34 days; complete cure after 2 year periods in 35 cases; improvement in 11 cases, and eventual death due to tuberculous infection 5 cases.

Pathologically, renal tuberculosis is a blood-borne infection with its primary locus in the substance of the kidney. It then breaks into the pelvis and is disseminated from here to other parts of the kidney, ureter and bladder. Lymphatics at the hilum are usually involved, but perinephritic invasion is rare. Infection of the opposite kidney is produced by transmission of the infectious process through the lymphatics of the submucous coat of the ureter producing first a tuberculous ureteritis and then involving the healthy kidney.

Brief case histories are cited.

H. R. FEHLAND, M.D.

**PERIOSTITIS AND OSTITIS OF THE SYMPHYSIS AND RAMI OF THE PUBIS FOLLOWING SUPRAPUBIC SYSTOSTOMIES:** Edwin Beer (*Jour. Urol.*, August, 1928, Vol. XX, No. 2, 233-236). It has been the author's observation during the past twelve years that periostitis of the pelvic bones, a very painful complication, has accompanied suprapubic operations on the bladder.

The cause of the periostitis is probably the result of a mild infection secondary to the bladder operation; it was not observed following ordinary suprapubic incision in which the bladder was not opened. Infection probably develops in the periosteum as a result of injury to the periosteum by traction on the attached rectus muscles, rather than injury produced by direct bruising from drainage tubes in the bladder.

The process develops usually in the bodies of the pubic bones sometime after the third week; further progress of the process usually follows down the de-

scending ramus of the pubis to the ischium. Clinically the course is afebrile. Pain is complained of when the patient sits up or coughs because of the pull of the rectus muscles against the inflamed symphysis. If the process involves the ramus of the pubis, pain and tenderness will be experienced along the attachment of the adductor muscles, which interferes with walking and the separation of the two thighs.

Early *x*-ray examination of the pelvic bones will be negative; later, however, they may show a fraying of the periosteum along the descending ramus with perhaps areas of absorption at the symphysis and in the descending rami, as well as the body of the ischium. These *x*-ray findings should not be confused with malignancy.

Treatment consisted of local heat, sitz baths, massage and baking. All the cases observed finally cleared up.

JOHN R. HAND, M.D.

**PRIMARY BILATERAL TUMORS OF THE TESTICLE:** Char. Clair. Higgins, M.D. (*Annals of Surgery*, August, 1928, 242-247). Attention is called to the general consensus of opinion that primary bilateral tumors of the testicle are a rarity.

A case with bilateral involvement is reported and diagnosed microscopically as an embryoma, a very malignant tumor, made up of large, irregular, deeply staining cells held in a moderately dense and rather loosely arranged fibrous connective tissue.

The majority of the cases of bilateral tumor of the testicle seem to occur in adult life. The signs and symptoms upon which a diagnosis is made are the same as in the case of unilateral tumors. In cases in which the enlargement of the opposite testicle ensues months after the primary operation, the diagnosis is less difficult.

Orchidectomy is recommended with subsequent radiation of the inguinal and lumbar glands. Colcy's serum is also recommended for this condition. The early metastases in malignant tumors of the testicle, however, makes the end-results of all forms of treatment unsatisfactory.

Emphasis is laid on the importance of a careful examination of the opposite testicle in all cases of unilateral tumor.

JOHN R. HAND, M.D.

**SUPRARENAL-RENAL HETEROLOPIA: REPORT OF A CASE:** Harold D. Caylor, M.D. (*Jour. of Urology*, August, 1928, 197-203). A case of suprarenal-renal heteropia is reported in which the right adrenal gland was observed below the renal capsule and partially embedded in the renal tissue, in a kidney removed for hydronephrosis. The convalescence was uneventful.

This is the fourteenth reported case in the literature. Weller found 13 reported cases of suprarenal gland in the kidney. He observed that this condition was frequently bilateral (eleven in 13 cases), that it affected chiefly males (ten in 13 cases) and that it was usually

associated with thymicolymphatic constitution. There may or may not be duplication of the suprarenal gland on the affected side.

Careful examination of kidneys for this anomaly during and immediately after operation is emphasized, for knowledge of the defect might save the removal of the suprarenal gland during nephrectomy, or if its removal was inevitable the epinephrin insufficiency which might develop would be anticipated and controlled by injection of epinephrin.

JOHN R. HAND, M.D.

**CARCINOMA OF THE STOMACH SUBMITTED TO AUTOPSY:** Margaret Warwick (*Annals of Surgery*, August, 1928, 216-226). An analysis is made of 176 cases of carcinoma of the stomach taken from the autopsy records of the Department of Pathology at the University of Minnesota during the past twenty years. In 7,800 necropsies there were 570 cases of carcinoma, and 176, 2 per cent of the total, or 30 per cent of the carcinomas, show a primary lesion in the stomach.

Carcinoma of the stomach occurred more frequently in men than in women; males 81 per cent, and females 19 per cent. The age incidence varied from thirty-two to eighty-two with an average of fifty-nine years. The largest number (35 per cent) occurred in the sixth decade with 29 per cent in the fifth decade.

The most frequent lesion was in the pylorus (42 per cent), then the wall (37 per cent), the cardia (11 per cent) and diffuse throughout the wall (10 per cent). Ulceration was present in 43 per cent and of those 51 per cent showed perforation, which was plugged in 16 per cent, and open, causing fatal peritonitis, in 35 per cent.

Constriction was definite in 34 per cent, of which 72 per cent were at the pylorus and 28 per cent at the cardia. Metastases occurred in 77 per cent, were absent in 23 per cent. The most frequent site was the liver, then regional lymph nodes, peritoncum, omentum, lungs, mesentery and bronchial lymph nodes.

The most frequent fatal complication was peritonitis, the etiology of which was evenly divided between perforation and operation. In 11 per cent there was nothing but the tumor to account for death.

Emaciation was entirely absent in 18 per cent, moderate in 20 per cent and prominent in 62 per cent.

JOHN R. HAND, M.D.

## QUININE IN MALARIA

There is probably no time when the chills and fever produced by malaria may not be cured by quinine. It is probably best to follow the standard treatment as recommended in the report of the National Malaria Committee (1918). It is safe to say that chills and fever that do not respond to this treatment are not due to malaria. It has not been definitely established whether or not substandard doses of quinine tend to make the disease refractory to quinine. (*Jour. A. M. A.*, July 21, 1928, p. 192.)

## PEDIATRICS

### SUPERVISORS:

CHESTER A. STEWART,  
LA SALLE BLDG., MINNEAPOLIS

ROY N. ANDREWS,  
MANKATO CLINIC, MANKATO

**ABDOMINAL PAIN IN CHILDREN DUE TO ENTEROSPASM.** Henry Heiman, M.D., and Philip Cohen, M.D. (*Arch. of Ped.*, July, 1928). The outstanding symptom is abdominal pain, usually referred to the umbilical region. The abdominal pain is often, but not invariably, related to meals. The duration of the attack varies from a few moments to several hours. Sometimes the colic recurs daily for a long time, at other times the intervals between the spells may be months. The two most common concomitant symptoms are vomiting and constipation.

The physical examination is marked by the conspicuous absence of positive findings.

This affection is very common among children. Indigestion is not the cause of the abdominal pain for often pain comes on before the ingestion of food.

The most effective treatment is with atropine. X-ray studies have shown spasm of the colon and pylorus, with hypertonicity and hyperperistalsis of the gastrointestinal tract.

R. N. ANDREWS, M.D.

**INFANTILE LARYNGEAL DIPHTHERIA; ITS DIAGNOSIS:** Samuel Cohen, M.D. (*Arch. of Ped.*, July, 1928). A great help in the diagnosis of laryngeal diphtheria has been given to us by the work of laryngologists like Jackson, Lymah, etc. It is rather a simple matter in a doubtful case to insert a small laryngoscope, see the interior of the larynx and make the diagnosis and treat accordingly.

A pediatrician should be able to examine an eye-ground and differentiate the normal from the abnormal. He should also be able to look into the larynx and be able to see past the cords and to the trachea. To look into the larynx of an infant is usually a simple procedure, requiring no anesthetic, just the proper instruments, a little practice and a good deal of patience.

Whenever a membrane is seen in the larynx it can safely be considered diphtheritic and treated as such until several smears and cultures taken directly from the membrane have proven otherwise.

The most important condition from which we must differentiate croup is that of retropharyngeal abscess.

Abt very well says diphtheria may be assumed if severe, constant and increasing dyspnea with aphonia is present. Do not expect voice changes in all cases of laryngeal diphtheria, as the voice changes only when the membrane is attached to the cords. If the membrane is below the cords, little change in the voice is noted.

There is no doubt that many cases listed as having

died of laryngeal diphtheria have not died of that condition but of something else. This demonstrates the importance in some of these cases of doing a direct laryngoscopy.

R. N. ANDREWS, M.D.

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## ROENTGENOLOGY

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SUPERVISORS:  
LEO G. RIGLER,  
MPLS. GEN'L HOSPITAL, MINNEAPOLIS

A. U. DESJARDINS,  
MAYO CLINIC, ROCHESTER

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ROENTGENOLOGIC STUDIES CONCERNING THE LOBE OF THE VENA AZYGOS: Hjelin and Hulten (*Acta Radiologica*, 9:126, April, 1928). The authors present an anatomical and roentgenological study which serves to explain the origin of a shadow seen in the upper portion of the right lung in a small percentage of normal individuals. In the roentgenogram this gives the appearance of a "falciform shadow" beginning with a large "plumb-bob" shaped end near the sternum just below the clavicle and extending laterally and upward to the extreme upper portion of the apex, always on the right side.

This shadow is due to a branch of the vena azygos vein itself. The small branch is visible because it runs through a fissure separating off a small extra lobe of the lung ("lobus vena azygos") which is present in about  $\frac{1}{2}$  per cent of normal individuals. This interlobar fissure is lined with pleura just as the large fissures are and the small extra lobe may be easily separated from the remainder of the upper lobe.

LEO G. RIGLER, M.D.

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ROENTGENOLOGICAL AID IN THE DIAGNOSIS OF ILEUS: Case (*Amer. Jour. of Roent.*, 19:413, May 1928). Roentgen-ray study of a patient may be made at the bedside with very little disturbance. Important information or a definite diagnosis with regard to intestinal obstruction may be obtained in this way without the use of an opaque mixture. Occasionally the use of a small amount of a barium-water-lactose mixture may be of assistance and appears to be harmless. An opaque enema may also be helpful to rule out colonic obstruction.

A diagnosis of acute intestinal obstruction is based upon the finding of dilated coils of small intestine, the "herring bone" appearance and the "ladder arrangement." The visualization is due to the accumulation of gas. In chronic ileus, examination in the erect or in the lateral and supine position may reveal numerous pockets of fluid and gas.

The method is of particular value in cases of post-

operative ileus, but paralytic ileus cannot be distinguished from organic obstruction. Frequently the correct diagnosis may be made 12 or 24 hours earlier with the assistance of the roentgen examination than would be otherwise possible.

LEO G. RIGLER, M.D.

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CONCERNING ANATOMICAL VARIATIONS IN BONES OF THE WRIST JOINT: Hulten (*Acta Radiologica*, 9:155, April, 1928). There is presented a review of the normal variations in the wrist joint especially with regard to the relationship of the ulna and radius to the os lunate.

On the basis of 400 normal cases it is found that in 61 per cent the distal surfaces of the radius and ulna are at the same level. In 23 per cent the ulna is definitely shorter; in 16 per cent the ulna is longer.

The extreme variations seem to lead up to corresponding deformities, ulnar hypoplasia and Madelung's deformity.

Kienböck's disease of the os lunate (traumatic malacia) shows a decided tendency to occur in conjunction with the shorter ulna. Four cases of Kienböck's disease are illustrated.

The author also reports a cystic appearance of the os lunate which seems to occur in conjunction with the longer ulna.

L. G. RIGLER, M.D.

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ROENTGENOLOGIC MANIFESTATIONS IN EIGHTY-SEVEN CASES OF GASTRIC SYPHILIS: Moore and Aurelius (*Amer. Jour. Roent.*, 19:425, May, 1928). A review of the roentgen signs of gastric syphilis and the differential diagnosis from scirrhus carcinoma, gastric ulcer, fibromatosis, and gastrospasm is given. The authors emphasize especially the following signs of gastric syphilis:

1. A concentric, symmetric, straight, comparatively smooth filling defect narrowing the gastric lumen.
2. The stenosis most frequently adjoins the pylorus, from which it may extend proximally but rarely involves the cardia.
3. An hour-glass or "dumb-bell" type of stenosis may occur in the middle third, the contracted canal being often long.
4. An involvement of the whole stomach may occur.
5. Sluggish peristalsis in uninvolved areas and absent peristalsis in involved areas occur.
6. The absence of a palpable mass is a striking feature.
7. The presence of marked gastric involvement without cachexia or striking clinical findings is suggestive.

The roentgen signs are by no means pathognomonic but may be helpful in the presence of convincing clinical data. The authors believe nevertheless that lo-

calized lesions should be resected because carcinoma cannot be ruled out and the distinction between simple ulcer and syphilis is often difficult to make.

LEO G. RIGLER, M.D.

THE ROENTGEN-RAY DIAGNOSIS OF PULMONARY INFECTIONS WITH THE FRIEDLANDER BACILLUS: Kornblum (Amer. Jour. Roent., 19:513, June, 1928). Pneumonia due to the Friedlander bacillus or *Bacillus mucosus capsulatus* is probably more common than is generally supposed. Its differentiation from other types of pneumonia is important because it is much more fatal and tends to leave residues more frequently.

Roentgenologically four stages of the disease may be recognized:

1. A stage of bronchopneumonia giving large dense shadows which tend to be unilateral and may be upper lobar as well as lower in location.

2. A stage of "pseudo-lobar" pneumonia, the areas of consolidation tending to coalesce but do not follow the outlines of the lobes.

3. A stage of multiple abscess and cavity formation, the abscesses being characterized by their thin walls and fluid levels. This is the most characteristic roentgen-ray appearance.

4. A stage of fibrosis showing shadows of scar formation together with cavities.

Differentiation from influenzal bronchopneumonia and tuberculosis is especially difficult. From the former it is differentiated chiefly by central origin, hemorrhagic tendency, and rarity of abscess formation which characterize influenza. Tuberculosis tends to show more upper lobe involvement, the cavities are thicker-walled, and shadows of recent lesions are present along with the fibrotic areas.

The author believes certain cases of bronchiectasis may be residues of Friedlander's pneumonia, while many supposed cases of chronic pulmonary tuberculosis in which tubercle bacilli have not been found may be in fact due to Friedlander's bacillus.

LEO G. RIGLER, M.D.

## DIPHTHERIA TOXOID

In the hands of Ramon and his co-workers in Paris, diphtheria toxoid has given satisfactory results in the prevention of diphtheria. According to reports it is being used on a large scale in France. The obvious advantage of diphtheria toxoid over antitoxic serum is that toxoid does not contain any protein of any foreign animal species. The H. K. Mulford Co. is supplying the product and has requested its consideration by the Council on Pharmacy and Chemistry. (Jour. A. M. A., July 7, 1928, p. 45.)

## BOOK REVIEWS

Books listed here become the property of the Ramsey and Hennepin County Medical libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

### BOOKS RECEIVED FOR REVIEW

STORY OF ELECTRICITY. With a Chronology of Electricity and Electrotherapeutics. Herman Goodman, M.D. Introduction by Victor Robinson, M.D. 62 pages. Illus. Price, \$1.50. New York: Medical Life Press (12 Mt. Morris Park West), 1928.

THE OPIUM PROBLEM. Charles E. Terry, M.D., and Mildred Pellens. Reported for the Committee on Drug Addictions in collaboration with The Bureau of Social Hygiene, Inc. 1042 pages. New York: Bureau of Social Hygiene, Inc. (370 Seventh Avenue), 1928.

MODERN MEDICINE. DISEASES OF THE NERVOUS SYSTEM—DISEASES AND ABNORMALITIES OF THE MIND. Sir William Osler, Bart, M.D., F.S.R. Re-edited by Thomas McCrae, M.D., and Elmer H. Funk, M.D. Third edition. 964 pages. Illus. Price, \$9.00. Philadelphia: Lea and Febiger, 1928.

THE TREATMENT OF DIABETES MELLITUS. Elliott P. Joslin, M.D., M.A. 4th edition. 998 pages. Illus. Price, \$9.00. Philadelphia: Lea and Febiger, 1928.

DISEASES OF THE GALL BLADDER AND BILE DUCTS. A book for practitioners and students. Evarts Ambrose Graham, A.B., M.D., Prof. of Surgery, Washington University School of Medicine, St. Louis, etc.; Warren Henry Cole, B.S., M.D., Instructor in Surgery, Washington University; Glover H. Copher, A.B., M.D., Assistant Professor of Surgery, Washington University; and Sherwood Moore, M.D., Professor of Radiology, Washington University. 477 pages. Illus. Price, \$8.00. Philadelphia: Lea and Febiger, 1928.

BACTERIOLOGY FOR NURSES. Charles F. Carter, B.S., M.D., Director, Terrell-Carter Laboratory, Dallas, Texas, etc. 213 pages. Illus. Cloth, \$2.25. St. Louis, C. V. Mosby Company, 1928.

RECENT ADVANCES IN CHEMISTRY IN RELATION TO MEDICAL PRACTICE. W. McKim Marriott, B.S., M.D., Dean and Professor of Pediatrics, Washington University School of Medicine, Physician-in-Chief, St. Louis Children's Hospital, 141 pages. Illus. Cloth, \$2.50. St. Louis, C. V. Mosby Company, 1928.

BLOOD AND URINE CHEMISTRY. R. B. H. Gradwohl, M.D., Director of the Gradwohl Laboratories of St. Louis, and Ida E. Gradwohl, A.B., Instructor in the Gradwohl School of Laboratory Technic, of St.

Louis. 542 pages. Illus. Cloth \$10.00. St. Louis, C. V. Mosby Company, 1928.

DIABETIC MANUAL FOR PATIENTS. Henry J. John, M.A., M.D., F.A.C.P., Maj. M. R. C., Director of the Diabetic Department and Laboratories of the Cleveland Clinic. 202 pages. Illus. Cloth, \$2.00. St. Louis, C. V. Mosby Company, 1928.

AN INTRODUCTORY COURSE IN OPHTHALMIC OPTICS. A. Cowan, M.D., Assistant Professor of Ophthalmology, Graduate School of Medicine, University of Pennsylvania. 262 pages. Illus. Cloth, \$3.50. Philadelphia: F. A. Davis Company, 1927.

This book gives a good working knowledge of the subject and can be read by every beginner in ophthalmology with interest and benefit. The ground is covered thoroughly and still has not become too complicated.

K. C. WOLD, M.D.

ABOUT OURSELVES. A Psychology for Normal People. H. A. Overstreet. 291 pages. \$3.00. New York: W. W. Norton Co., 1927.

Feeling that normal people are neglected in modern psychology, H. A. Overstreet writes a book for them alone, and the result is a charming, interesting volume written in simple language. He first discusses evasional behavior and says that many people evade the responsibilities of life by refusing to grow up or by reverting to childhood characteristics, but that "the really mature adult resolutely faces life-necessities . . . he is athletic enough in mind to meet them . . . he develops achievement fiber." As to reactions to life in general he says, "The timid flee, the lazy shirk, the irresponsible kick up their heels and have a good time. The effective personality meets a situation squarely and masters it through intelligence." "But to meet one's problems with a four-year-old technic when one is a forty-year-old; to be a child when one needs to be a responsible adult—it is that which makes life so often futile and pathetic."

He then shows how a life may become "fixed" at any stage of development and remain stationary at that level instead of going on with normal development. This fixation may be either the emotional or the vocational life or both. Another favorite evasional reaction is to build up fictions by projection or introjection of virtues or vices of one's self into other people or surroundings and in his illustrations of this the reader may recognize many of his friends or acquaintances with an occasional fleeting glimpse of himself. Another attempt to escape reality is by "wish-thinking," which can only be cured by developing of the habit of fact thinking. And when other evasional methods fail, the weak individual flies into disease, usually hysteria, and thus manages to keep the center of the stage.

A mild form of paranoia the author calls "micro-paranoia" and considers it an inflation of ego usually resulting from faulty childhood training or home surroundings during early life. Such a person has trouble-

some moods and peculiarities but is not bad enough to commit to an asylum, and remains dangerously at large, creating havoc and unhappiness about him. The author says, "The most important safeguard against the onset of this subtle disease is, first of all, to teach the young life not to avoid difficulties."

He divides human beings into contractives and expansives. The contractives are timid, introspective, irresolute and morose, while the expansives are brave, public spirited, resolute, cheerful and friendly. The distinction of the two types is usually made in childhood and is frequently the result of early surroundings. The hope of the contractive, in the opinion of the author, is in adult education, but that education must be real with practical results and not the mere accumulation of facts; it must be a "transfer from book to life." He thinks that the hope of most of us is in the development of an intercreative type of mind which is part of the equipment of the expansive and that "one of our chief needs of today is a grasp of what all education is about."

This book will be of interest to any thinking person, lay or professional. It will give a clearer insight into humanity in general, it will give greater tolerance and understanding toward fellow men, and, best of all, it may give a better understanding of one's self with closely hugged faults, and perhaps it may give the clarity of vision which may point the way to a change of viewpoint and to the meeting of life squarely. Even though the latter is not accomplished, however, the book will bring to any reader much of profit and of interest, and to the physician it should bring a better understanding of the foibles and fancies of his patients.

MARGARET WARWICK, M.D.

PRINCIPLES AND PRACTICE OF OBSTETRICS.

Joseph B. De Lee, A.M., M.D., Professor of Obstetrics, North West University Medical School. Fifth Edition. 1140 pages. 1129 illus., 201 in colors, \$12.00. Philadelphia and London: W. B. Saunders & Company, 1928.

The fourth edition of this text appeared in 1924. The present volume has a few more pages than the last. "Both text and illustrations have been carefully revised." Very little matter could be left out—the pruning was done in the first and second editions. Some obsolete pictures were omitted, and a large number of new ones added.

"The chapters on the treatment of hyperemesis, eclampsia, abruptio placentæ, placenta previa, ruptura uteri, postpartum hemorrhage, breech presentation, the operation of forceps—what might be called the obstetric diurnalalia—have been almost completely rewritten and new illustrations supplied."

The purpose of the author in the arrangement and treatment of the subject matter is best given in his preface: "In previous editions I restricted to the minimum the purely scientific matter, and expanded to the limits of the cover the practical, aiming to accomplish two purposes at once—to give the student as much as was necessary for a proper comprehension of an im-

portant subject and yet not overburden his study-hours, and to supply the practitioner with a wealth of detail and numerous illustrations of how to do his work. I have tried to make this book an ever-present help in time of trouble. The student must, and should, skim over many of the pages, only absorbing their high lights. All he needs to learn are the fundamentals of the science of obstetrics and the principles of treatment. During his intern year and his early practice he will study the details. The increase in the number of pages is in the parts devoted to the general practitioner.

"The chapter on Forceps was much enlarged and given new illustrations to show the great artistry that can be exhibited with this ancient instrument.

"The illustrations for the new, low, or cervical cesarean section, laparotrachelotomy, have been improved and increased in number to make the operation more easily learned by the general surgeon and occasional operator. I believe it is possible to reduce the mortality and morbidity of abdominal delivery 50 per cent by replacing the classic cesarean with laparotrachelotomy.

"The operation of Gottschalk-Portes, temporary implantation of the infected uterus, has been briefly described, as it promises to find a place in our armamentarium against craniotomy on the living child. It is too new, however, to demand complete revision of the chapters devoted to the treatment of contracted pelvis and infection during labor, although it must be taken into consideration. In the next edition we will be able to say more definitely where it belongs."

The purpose of the author, one feels, has been attained as nearly as possible. This detailed and well illustrated exposition of ways and means in obstetrical procedures is carried out in many instances to the point where an illusion is created that Dr. De Lee is actually present in consultation, leading the harassed practitioner out of some difficult situation.

E. C. HARTLEY, M.D.

**MUSCLE FUNCTION.** Wilhelmine G. Wright, Boston. With a foreword by J. Playfair McMurrich, Professor of Anatomy, University of Toronto. 188 pages. Illus. Price, \$3.50. New York: Paul B. Hoeber, 1928.

A clearly written book giving a highly technical explanation of the general principles of muscle action. The author classifies muscles as prime movers, synergists or emergency muscles, explaining in this way how the same muscle acts in a different capacity in different movements.

Five chapters are given to a detailed account of the separate and concerted action of all the body muscles and the last chapter is well devoted to a useful table of all the muscles giving all the movements in which each takes part.

The book is based not on cadaver study or on the study of muscle action produced by faradization, but by the observation of how living subjects, both normal and partially paralyzed subjects, really do perform various movements.

PAUL W. GIESSLER, M.D.

**ASTHMA: ITS DIAGNOSIS AND TREATMENT.**

William S. Thomas, M.D., Associate Attending Physician in Immunology, St. Luke's Hospital, New York. 279 pages. Illus. Price, \$7.50. New York: Paul B. Hoeber, Inc., 1928.

This book is a conservative and scientific exposition of the subject of asthma. It is devoid of any enthusiastic or loose statements. It is a monograph of 239 pages of reading matter, well arranged and easily read.

In dealing with the causes of asthma the author mentions the part played by the specific and non-specific factors in the production of the attack. The non-specific factors mentioned, that may be operative in abetting attacks in persons hypersensitive to specific substances, are constipation, physical and psychical upsets, focal infections and other pathological states; also exposure to the elements, violent exercise and irritating vapors. These factors later become operative as the asthmatic habit develops. Anyone who has had a considerable clinical experience with asthma will recall instances of where one or more of these factors were an influence. He makes the statement that, save in cases of pollen sensitization, sensitization is usually multiple. House and street dust contain protein that act as a specific excitant in sensitive patients and are important factors.

An interesting variety of asthma due to non-protein substances such as aspirin, ipecac, podophyllin, poke-root, physostigmin, rhubarb, lycopodium, pyrethrum, occurring chiefly among people connected with retail and wholesale drug trade, is mentioned. The fact that non-protein may cause asthma increases our difficulties in finding the causes in baffling cases of asthma. About 25 per cent of all cases of asthma will show no evidence of sensitization and in these nearly all have a focal infection that bears a causal relation to the asthma. In this group properly conducted vaccine therapy offers the best measure for relief of symptoms.

In addition to the usual focal infections, the author mentions the intestinal tract as a focus. Vaccine injections prepared from the proper organisms in the intestinal tract have given lasting relief. The author feels that the next great step in treatment of asthma will be in developing a method for universal desensitization applicable to patients with multiple sensitization. At present we have no such method. In examination the specific tests rank below the case history.

Under treatment ephedrin is completely dealt with. Failure to obtain relief is due to improperly adjusted dosage which must be determined for the individual case. The rectal administration of 8 to 24 c.c. of ether in double the quantity of olive oil is a valuable palliative measure. The author favors the dermal over the intradermal method of testing. Codein and protein from tuna fish always give positive skin reactions and may be used to test out the ability of the skin to react. Epinephrin and ephedrin abolish the reaction and patients should not be tested when under their influence. The reaction may also be abolished between attacks because of biological changes in the individual producing temporary desensitization. The failures in vaccine therapy are attributable to use of vaccines that con-

tain organisms that are non-specific. To succeed it is necessary to have the help of a competent bacteriologist in the preparation of the vaccine.

The non-specific methods are discussed but the author is unconvinced as to their value.

The removal of foci alone is insufficient, but combined with proper vaccine therapy in the non-sensitive group is reasonably certain to produce satisfactory results.

Physical agents and effects of unsuitable climate are a contributory cause in producing bronchospasm but change of climate should be reserved for only those

cases in which infection in the paranasal sinuses cannot be dealt with by the rhinologist.

The reviewer has taken the above statements from various parts of the text as they have caught his attention as to their importance.

The book itself takes up in detail the procedure in history taking, in determining the etiological factors and the treatment of asthma. It should prove to be a valuable book for the practitioner and the internist to orient himself on asthma, and a useful guide in the management of the condition.

HUGO O. ALTNOW, M.D.

#### URASAL NOT ACCEPTABLE FOR N. N. R.

The Council on Pharmacy and Chemistry reports that Urasal (Horner) is offered with the following indefinite and nonquantitative statement of composition: "Urasal (Horner) Granular Effervescent Contains: Hexamethylenamine, Pierazine, Lithia and Acid Benzoic in proportionate combination." The information sent the Council stated that Urasal contained "to each average dose of one dessertspoonful 7½ gr. Hexamethylenamine, 2 gr. Lithia Benzo Citrate and 1 gr. Piperazine Tartrate." Information in regard to the composition of "Lithia Benzo Citrate" was not supplied nor was the weight of the product represented by "one dessertspoonful" stated. The Council reports that the preparation is "recommended in the treatment of Rheumatism, Gout, Cystitis, Uric Acid, High Blood Pressure and all Affections of the Biliary Tract" and that the circular wrapped with the trade package paints an exaggerated picture of the toxemia brought about by intestinal stasis. The Council also points out that the advertising quite ignores the now generally accepted limitations of the effects obtained by the administration of hexamethylenetetramine (methenamine, U. S. P.) and ignores the fact that piperazine has been generally discarded. The Council found Urasal (Horner) unacceptable for New and Non-official Remedies because it is an unscientific mixture of indefinite composition, marketed under a name which is not descriptive of its composition but therapeutically suggestive instead; and because it is marketed with unwarranted therapeutic claims in a way which will lead to its indiscriminate and ill advised use by the public. (Jour. A. M. A., July 28, 1928, p. 247.)

#### IOSALINE NOT ACCEPTABLE FOR N. N. R.

The Council on Pharmacy and Chemistry reports that according to information supplied by the Iosaline Co., Inc., Iosaline is a mixture containing potassium iodide, equivalent to 5 per cent of iodine; menthol, 1 per cent; methyl salicylate, 12 per cent; alcohol, 70 per cent. Only indefinite statements of composition appear on the label and in the advertising. The Council reports that, although it is well known that potassium iodide is not absorbed to any extent when applied to the skin, the advertising claims that the iodine of Iosaline is readily absorbed. The Council held the preparation unacceptable for New and Non-official Remedies because the quantitative composition is not declared on the label and in the advertising, because its name is not descriptive of its composition, and because it is sold with unwarranted therapeutic claims. (Jour. A. M. A., July 21, 1928, p. 173.)

#### NATURE'S WAY REDUCING CREAM

Health Laboratories, Ltd., Chicago, are able to get fifteen dollars for a few ounces of a harmless, but worthless, mixture of "oil, wax, epsom salt, baking soda and alum" sold under the claim that, when rubbed on the human body, it "reaches the excess fat deposits immediately underneath and slowly dissolves them." The claim is made that the product dissolves the fat deposits by reversing the natural processes of excess fat storage in the human body. The idea that a woman with "abnormal breasts, large hips or heavy thighs" can reduce the size of these portions of her anatomy by rubbing on a mixture of petrolatum, mineral oil, beeswax, epsom salt, baking soda and alum is so fantastic that the thing would be farcical were such ignorance not tragic. (Jour. A. M. A., July 21, 1928, p. 190.)

# Minnesota State Medical Association

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## SIXTIETH ANNUAL MEETING

June 11, 1928

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### MINNEAPOLIS, MINNESOTA

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#### PROCEEDINGS OF THE HOUSE OF DELEGATES. FIRST MEETING—MONDAY, JUNE 11, 1928

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The first meeting of the House of Delegates of the Minnesota State Medical Association, held at the Hennepin County Medical Society, Minneapolis, Minnesota, June 11, 1928, convened at nine-forty o'clock, Dr. C. B. Wright, President of the Association, presiding.

President Wright introduced Dr. Frank Billings. The audience arose and applauded.

\* DR. F. S. BILLINGS (Chicago, Ill.): I feel very highly complimented that your officers invited me up here to say a few words to you this morning, and yet I don't know just what I can say to a roomful of men like this, anything of an inspirational nature, excepting perhaps as an elderly man of long experience in organized medicine especially.

You, of course, are proud of our great American Medical Association, proud of our great constituent associations which are doing so much work, and I am sure you all join with me in regret that there are so many other medical organizations in the country, so many that it divides our attention and detracts from the things that you as a state organization and the American Medical Association can do. We should bear that in mind always and discourage the formation of so many district or national organizations outside of organized medicine because our organizations are of such a character that practically everything done for the medical profession and the public can be done through our national organization, the constituent organizations and the county societies everywhere.

I have had the pleasure of visiting your State Association before and listening to papers read, and it is no flattery to say the Minnesota State Association is in the fore ranks of the constituent societies. You have good men in the state and from what I have learned of your interest in public health, your interest in the public, your interest in your brother practitioners in attempting to organize and give opportunity for post-graduate work, Minnesota is in the fore ranks of the states of the Union.

It is those things, I think, that we ought to have in mind as an organization. Our charter says that we have organized for the advancement of scientific med-

icine and the welfare of the people. If we always bear that in mind we can only carry out that fundamental principle by being broad-minded, unselfish, and as helpful as we can to our brother practitioners.

I have been in the national organization as a trustee and in the House of Delegates, and it hasn't always been easy to carry forward those ideal principles for which the organization was established. We always have in our membership in the medical profession men who haven't the vision and who are individualists not working in the group to forward the best interests of the physician or the public, but with the steadfast moral support of the general profession those things can be carried out.

I am surprised and gratified to see that your House of Delegates is meeting here in the library, the meeting place of the local society. That is a splendid thing. I wonder sometimes, as I go around, why local societies do not do more of that thing. If you work in unison it isn't difficult to establish a center where you may meet, with such a library as this. If you all take an interest in a library such as this it is bound to be helpful to everyone concerned. It doesn't take much to do it if you will unite. Perhaps some doctor who is more gifted or more blessed with the wealth of the world could start such a thing as this by donation and the rest would go into it. As I say, I am mighty glad to see this, and I hope, as I said to Dr. Head, that your people come here and meet in this library where you have all your journals.

We have a library in Chicago that is named for me because I gave my private library when I ceased active practice and helped to endow it. That furnishes a large reading room and is now a pretty well rounded out library with all current literature, history of medicine as well, and all of the classics. Every time I go down to that library I am delighted and rather astonished, too, to see the number of doctors and students that are there. The average attendance is 100 students daily. Last year there were 230 every weekday, and it is the only library in Chicago that is kept open on Sunday. I say that is a delight to me because that is the thing I think we should promote as far as we can in every community of doctors.

I can't interest you any more than that. I have gotten along in life, but I am more in love with medicine today than I ever was. I would like to go

back and start all over again at twenty-one or twenty-two years of age. With all the hardships I faced, I would like to face them all again, to have the delight of attending the sick and injured and associating with the best crowd of people in the world, the medical profession. (Applause.)

PRESIDENT WRIGHT: I am sure we appreciate very much Dr. Billings' coming up here and talking to us.

A very interesting regional directors' conference was called here yesterday consisting of the officers of the states of Wisconsin, Minnesota, North and South Dakota. We had hoped to get Iowa and Montana in too but they didn't come. We have some guests here who attended that meeting. I see Mr. Crownhart, executive secretary of the State Medical Society of Wisconsin, and I should like to introduce him.

MR. J. G. CROWNHART (State Medical Society of Wisconsin): I bring greetings to you from the Council on their specific instructions.

We look upon Minnesota as not a rival state but as a sister state and we find much here to inspire us. We are especially interested in the work you are doing in public health education. We find much that we want to duplicate in Wisconsin, and we hope the time will come, Mr. President, when Wisconsin can also have fifteen dollar dues. (Applause.)

PRESIDENT WRIGHT: I guess you will have to get Herman Johnson to go over there and talk.

Is Dr. Smith of the Dental Association here?

DR. W. H. SMITH (Minneapolis, Minn.): I don't know why this was wished on me. We are happy to have you here and are happy to associate with you. I understand our duties are to see how well we can keep some of your legislative matters in hand, and I am representing the State Dentists' Society on that particular score. I should like very much to get in touch with your Dr. Johnson so that we might go over those things, and if there is anything the Dental Society can do, we are here to do it. (Applause.)

PRESIDENT WRIGHT: We have invited representatives from the State Druggists' Association and from the State Bar Association.

Next in order of business are the minutes of the last session of the House of Delegates. If there are no objections or corrections to those minutes, they will stand approved as published in MINNESOTA MEDICINE in October, 1927.

Dr. Braasch made the suggestion last year that the reports of the various committees be referred to a Reference Committee, and for this reason I appointed him chairman of that committee. All the reports have been carefully reviewed by the committee and by the Council yesterday in a long session. We will ask each man to read his report and then we will have Dr. Braasch make his recommendations, and then we hope for discussion.

We are very anxious to have every man here take a vital interest in every one of these reports which represent largely the work of this Association for the year and offer any criticisms or suggestions.

Dr. Meyerding has called on me for a report. This

is the first time the President of the Association has ever been called on to do that. I am supposed to tell this group what I have been doing for you and this organization since the first of January, and I shall make a brief report.

Dr. C. B. Wright read his prepared report. (Applause.)

## PRESIDENT'S REPORT

The first duty of your president on assuming office is the appointment of committees. This is a very important duty and requires considerable thought and consultation with the members of the Association. In the selection of the committees, every effort was made to appoint men who would work and who seemed sincerely interested in the welfare of the organization. Wherever possible, new men were added to the committees with the idea of creating greater interest and adding new enthusiasm.

In company with the secretary, your president has visited eleven different local societies throughout the State since the first of January.

Second, he attended the meeting of the secretaries of the county societies in St. Paul.

Third, he also attended the Regional Officers' meeting.

Fourth, in April he attended the meeting of the chairmen of the local Public Health Committees.

Fifth, he attended two meetings of the Council and two Councilor District meetings.

Sixth, he also met with the members of the profession who were giving clinics throughout the State for the Public Health Association with the idea of co-operation between the work of the Public Health Association and the medical profession in the various communities where these clinics are held.

In addition to this there has been almost daily correspondence dealing with matters concerning the Association and with the work of the various committees, and almost daily contact with the Secretary, either by telephone or personally, regarding Association matters.

In addition to other duties of the office, the president has been asked to write a letter each month for MINNESOTA MEDICINE. This has been done.

He was also designated by the council to arrange for the dinner to the House of Delegates of the A. M. A. in Minneapolis.

The completion of the registration of the profession throughout the State has made it possible to make a study of our membership and we are attempting to find out why there are about eight hundred physicians in the State of Minnesota licensed to practice who are not members of the Association. This work is being done by Dr. Meyerding's office.

Each local Society has received a list of the men licensed to practice in its district, who are not members of the Association, with the idea that a study will be made of the situation and it is hoped that a strenuous effort will be made to get into the Association every man who is eligible.

In regard to membership, it would seem that the new constitution is too generous in its treatment of members over sixty years of age who are physically and financially capable. On the other hand, no consideration is shown to the young man just entering the profession.

It would be a splendid thing if we had some way of getting the young men into the Association, especially our own graduates, as soon as they are licensed, on some probationary basis and at a very nominal cost, particularly if they intend practicing in Minnesota.

In conclusion, I wish to thank the members of the various committees for the time and thought they have put into the work of the organization and to congratulate the chairmen on the excellence of their reports. Practically every committee has something constructive to offer for the betterment of the profession.

I wish particularly to commend the work of our able secretary, Dr. Meyerding, who has been untiring in his efforts to build up the Association and to do everything possible for the betterment of every member.

SECRETARY MEYERDING: The President has appointed the Credentials Committee, and as soon as possible they will report. A motion will then be in order to legalize what has been done by the House of Delegates.

PRESIDENT WRIGHT: Dr. Meyerding's office took a map of the state of Minnesota and stuck pins indicating the location of every physician, every osteopath, and every chiropractor licensed to practice. Miss Hirsch has enlarged this map and sketched in the counties. You may be disappointed in not finding the chiropractors in your community in just the right location on the map, but they are there somewhere.

You see the population of doctors and the population of chiropractors, and the population of osteopaths are distributed over the districts where the financial condition of the people will support them.

SECRETARY MEYERDING: Every secretary and councilor has a list of non-members in his district.

PRESIDENT WRIGHT: The next report is the report of the Secretary. Dr. Meyerding.

Dr. E. A. Meyerding read the report of the Secretary. (Applause.)

#### REPORT OF SECRETARY

The demand for the Secretary's time to attend meetings and conferences with the officers and component organizations of this Association has increased many fold. The Secretary is daily required to attend some medical meeting or conference that pertains to the affairs of this organization.

Eleven medical meetings have been attended with the President; nineteen group meetings with Dr. Earl, Chairman of the Public Health Education Committee; five group meetings with other officers of the organization. In addition, there were daily conferences with individual officers and committee men.

#### SOCIETIES VISITED

During the past year the Secretary has spoken at meetings of the following Societies:

Upper Mississippi Medical Society

Camp Release District Medical Society  
Olmsted County Medical Society  
Rice County Medical Society  
Steele County Medical Society  
Saint Louis County Medical Society  
Hennepin County Medical Society  
Mower County Medical Society  
Stearns-Benton County Medical Society  
Park Region District and County Medical Society  
Clay-Becker County Medical Society  
Red River Valley Medical Society  
Houston-Fillmore County Medical Society  
Ramsey County Medical Society  
Redwood-Brown County Medical Society.

#### GROUP MEETINGS

The Secretary also spoke to groups of members at Alexandria, Detroit Lakes, Crookston, Bemidji, Brainerd, Hibbing and Duluth.

Minneapolis—Public Relations Conference.

St. Paul—Public Health Education Committee breakfast meeting.

St. Paul—Officers and Secretaries Conference.

St. Paul—Public Health Education Committee meeting.

Minneapolis—St. Andrews Hospital with Dr. George Earl.

St. Paul—Committee on Contract Practice.

Rochester—District No. 1 Councilor meeting.

Minneapolis, Deaconess Hospital with Dr. George Earl.

St. Paul—Public Health Education Committee meeting.

Minneapolis—Radio Committee meeting.

Chicago—Public Health Conference of A. M. A.

Minneapolis—Public Health Education Committee monthly meeting.

Minneapolis—St. Mary's Hospital with Dr. George Earl.

Minneapolis—Hillcrest Hospital with Dr. George Earl.

St. Paul—Public Relations Conference.

St. Paul—St. Joseph's Hospital with Dr. George Earl.

Wadena—District No. 7 Councilor Meeting.

St. Paul—Heart Committee meeting.

Detroit Lakes—Conference with Dr. Rutledge and Dr. Wright.

Ottertail Lake—Conference with Dr. Burnap and Dr. Wright.

Willmar—With Dr. Earl.

St. Louis County.

Steele County.

Minneapolis—Dr. Wright and Dr. Myers.

A. M. A. Secretaries Conference at Chicago.

It was the program for this year to have the State President visit each component Medical Society. To date, thirteen societies have been visited by the President and he is booked for two more. We urge that every component society arrange a meeting for the State President, so that the plans and program of this organization can be presented directly to its members.

There is so much of importance pending at this time that every possible opportunity to bring before the individual members the many problems that confront us should be grasped.

Meetings of hospital staffs or of groups of ten or twelve men should be arranged in various localities and members of the Public Health Education Committee asked to be present to present and discuss the many problems that are associated with this activity.

A. M. A. CONFERENCES

The Secretary attended the Annual Conference of the State Secretaries and Editors at Chicago in November and also the Public Health Conference in March in Chicago. Much of interest to the profession was discussed, most of which has been reprinted in the American Medical Journal or Bulletin.

It was of interest to note the attitude of the lay leaders of medicine at the Public Health Conference in March. The lay Executive heads of the great foundations that are promoting Health were present and seemed to take the attitude that there was a distinct difference between Public Health (Preventive Medicine) and Medical Economics (Medical Practice). There are certain individuals, not graduates of medicine, who are assuming, in part at least, leadership in Preventive Medicine.

DISTRICT COUNCILOR MEETINGS

Two District Councilor meetings were held: the first at Rochester, March 13, 1928, under the direction of Dr. Melvin Henderson, Councilor for the first district; the second at Wadena under the direction of Dr. W. W. Will, Councilor for district seven. All the physicians in each district were invited and the attendance averaged more than 30 men at each meeting. President Wright and the Secretary in addition to the local Councilor were present.

It seems to us that the value of this type of meeting is so great that each Councilor should arrange to have such meetings and all the members of his district be invited. He should make it imperative that all officers of his societies be present.

MEMBERSHIP

The membership has held up most satisfactorily. We have 41 more paid members than we had a year ago at this time. We have more members on our roster than we had a year ago. The total paid membership at the close of 1927 was 2,026. We have to date reported to the American Medical Association 2,069 members, 26 of whom are emeritus and 16 are honorary, leaving 2,026 paid members at this date. This number will undoubtedly be increased before the close of the year.

	Dec. 31, 1927	June 5, 1928	Emeritus	Honorary	Transfer
Blue Earth County.....	32	31	1	1	
Blue Earth Valley.....	22	19	3		
Camp Release Dist.....	47	45			
Central Minn. Dist.....	18	16			
Chisago-Pine County .....	16	15			
Clay-Becker County .....	18	18			

Dodge County .....	8	8			
Freeborn County .....	20	20			
Goodhue County .....	15	14			
Hennepin County .....	491	492	7	10	1
Houston-Fillmore County ..	22	20			
Kandiyohi-Swift County ....	16	20			
Lyon-Lincoln County .....	19	19			1
McLeod County .....	16	16			
Meeker County .....	10	8			
Mower County .....	23	23			
Nicollet-LeSueur County ....	16	15			
Olmsted County .....	265	278			
Park Region Dist. & Co.....	41	37			
Ramsey County .....	318	310	8	3	
Red River Valley .....	56	57			
Redwood-Brown County ....	26	31			
Rice County .....	25	30			
St. Louis County.....	184	180	3	1	
Scott-Carver County .....	20	19			
Southwestern Minnesota ....	51	56			
Stearns-Benton County .....	42	42	2		
Steele County .....	14	12			
Upper Mississippi .....	70	73			
Wabasha County .....	12	10	2		
Waseca County .....	10	9			
Washington County .....	14	14			
Watsonwan County .....	6	6			
West Central Minnesota.....	25	23			
Winona County .....	22	24			
Wright County .....	16	16			
	2,026	2,026*	26	16	1

TOTAL MEMBERSHIP IN 1928.....2,069

\*Paid.

MEMBERSHIP IN THE MINNESOTA STATE MEDICAL ASSOCIATION AS COMPARED WITH THE NUMBER OF PHYSICIANS IN THE STATE

	Number Resident	Members	Non-Members
Blue Earth County.....	46	33	13
Blue Earth Valley.....	33	22	11
Camp Release District.....	67	45	22
Central Minnesota .....	31	16	15
Chisago-Pine .....	23	15	8
Clay-Becker County .....	30	18	12
Dodge County .....	11	8	3
Freeborn County .....	23	20	3
Goodhue County .....	23	14	9
Hennepin County .....	923	510	413
Houston-Fillmore .....	33	20	13
Kandiyohi-Swift .....	22	20	2
Lyon-Lincoln .....	26	19	7
McLeod County .....	17	16	1
Meeker County .....	11	8	3
Mower County .....	31	23	8
Nicollet-LeSueur County .....	24	15	9
Olmsted County .....	340	278	62
Park Region District .....	63	37	26
Ramsey County .....	454	321	133
Red River Valley.....	76	57	19
Redwood-Brown .....	37	31	6

Rice County .....	32	30	2
St. Louis County.....	233	184	49
Scott-Carver .....	30	19	11
Southwestern Minnesota .....	70	56	14
Stearns-Benton .....	56	42	14
Steele County .....	17	12	5
Upper Mississippi .....	121	73	48
Wabasha County .....	19	12	7
Waseca County .....	11	9	2
Washington County .....	23	14	9
Watsonwan County .....	8	6	2
West Ceneral Minnesota.....	32	23	9
Winona County .....	26	24	2
Wright County .....	22	16	6

# DIRECTORY OF PERSONS PRACTICING THE ART OF HEALING

For the first time in the history of the state of Minnesota a card file of all physicians, chiropractors and osteopaths registered with the Basic Science Board has been compiled. This list comprises about 4,000 members and has been arranged according to county and district societies. This list gives us a great deal of valuable information.

A map has been made from this list showing the distribution of the medical men, osteopaths and chiropractors throughout the state. This map was prepared for the President to use in his report.

From these records a detailed study of the men licensed to practice medicine has been made and a list of all members and their districts sent to each Secretary and Councilor of the State Association. This information could not have been obtained if the present law requiring registration of all persons practicing had not been in operation.

## CORRESPONDENCE

Correspondence has increased many times in the past year. Members and local societies write for information frequently; insurance companies and others make inquiries relative to members; the American Medical Association requests that we keep in touch with our representatives at Washington; the activities of the various committees are growing rapidly; correspondence regarding illegal practitioners is compiled and forwarded to the proper licensing boards.

## PUBLISHED LIST OF PERSONS LAWFULLY AUTHORIZED TO PRACTICE HEALING IN MINNESOTA

The Minnesota State Board of Health has issued and is now distributing a "List of Persons Lawfully Authorized to Practice Healing in the State of Minnesota," as provided by Chapter 149, Session Laws, Minnesota, 1927, which requires that "within thirty days after receiving from the secretaries of the several examining boards any of the lists of persons lawfully engaged in the practice of healing in this state as by this section provided, the State Board of Health of the State of Minnesota shall cause such lists to be printed and a copy thereof to be sent to each city, village or district health officer and each sheriff and county attorney in the state."

Medical men should see that this list is kept on file. Inquiry on the part of the profession of the officers

required by law to keep this list on file will assist in its being available when needed.

## COMMITTEES

Most of the committees are functioning remarkably well. The importance of study of the evolution of medical practice and its relation to the various industrial and commercial agencies is becoming of greater importance constantly. The entrance of individuals other than the graduate physician and the practicing physician into the realm of medical practice is increasing. It seems to us that this factor is probably as great if not a greater menace than the establishment of new cults. There is a difference of opinion as to what the practice of medicine is. There seems to be a uniform opinion, however, of those practicing medicine of what this field covers; but those in social, welfare, and public health work frequently have a radically different opinion.

Your committees are studying these questions carefully and use good judgment in proceeding cautiously. It is only by careful study by the majority of the members of organized medicine and the adoption of a definite policy that the future in any way can be directed.

The work of the various committees, particularly the Public Health Education Committee, has been conducive in bringing about a more admirable state of organization. Members are learning to coöperate as they never did before. This is especially true in the smaller cities where formerly rival groups practiced medicine. The numerous small group meetings have brought home to the profession some of the economic problems of the practice of medicine.

## SECRETARIES' CONFERENCE

Because of the value of the State Officers and Secretaries Conference, the Council authorized its continuance. Accordingly, the second annual meeting was held at the Saint Paul Hotel, January 14, 1928. Twenty-six component societies were represented, and sixty-six doctors attended. The chairmen of the various committees outlined their 1928 programs; discussions covered the State Association dues, the Basic Science Law, the new Medical Practice Act, Health and Welfare Work and Publicity.

## NORTHWEST REGIONAL CONFERENCE

The officers of the State Medical Associations of Wisconsin, North Dakota, South Dakota, and Minnesota met at the Saint Paul Hotel January 15, and organized the Northwest Regional Association. Dr. W. F. Braasch, Rochester, Minnesota, was elected president and Mr. J. G. Crownhart, Milwaukee, Wisconsin, was made secretary. This conference called by your state officers is probably epoch making in the history of the practice of medicine in the Northwest.

## PUBLIC RELATIONS CONFERENCES

The Public Health Education Committee have held three semi-annual conferences: March 17, 1927, at the Saint Francis Hotel, Saint Paul; December 10, 1927, at the Nicollet Hotel, Minneapolis; and April 26, 1928, at the Saint Paul Hotel, Saint Paul. All three were well and representatively attended.

## NEWSPAPER SERVICE

Commencing with June, the Public Health Education Committee will furnish to those newspapers throughout the State desiring it, a weekly health article of interest to laymen. One hundred and eighty newspapers have already asked for this service.

## AUXILIARY

The State Office and the Women's Auxiliary are now working out definite plans of coöperation. It has been suggested that whenever the Chairman of the Public Health Education Committee and the Officers of the Association attend a local meeting where the women will be present, a representative of the Auxiliary also attend.

## CONSTITUTION AND BY-LAWS

Our Constitution and By-Laws should be amended to conform more closely with those of the American Medical Association. At present some confusion exists as to reporting membership.

## LAY HEALTH ORGANIZATIONS

Definite plans have been formulated whereby an endeavor will be made to have the State Association in close contact with all lay organizations participating in health work.

## ATTORNEYS' REPORT

June 4, 1928.

Dr. E. A. Meyerding,  
Secretary, Minnesota State Medical Association,  
11 West Summit Avenue,  
St. Paul, Minnesota.

Dear Sir:

Pursuant to your request of June 1, for report to date of cases commenced, pending or disposed of during the year 1927, we submit the following:

*LaBelle vs. Larson.*

Mrs. Josephine LaBelle vs. Dr. M. L. Larson of St. Paul. Action commenced in 1927, by plaintiff, in District Court of Ramsey County. Negligence alleged in treatment of infected hand and finger, resulting in stiff middle finger, turned inward toward palm and claim of extensive partial disability of hand. Dr. M. L. Larson was insured by Aetna Insurance Company. Trial of the case was commenced before the court and jury in November, 1927. Plaintiff and her attorney, finding themselves unable to make out a case because of certain rulings of the court pursuant to our objections, dismissed the case during trial. The action has not been recommenced and probably will not be.

*Schoenbachler vs. Anderson.*

Caroline Schoenbachler vs. Dr. R. E. Enderson, of Willmar, Minnesota. Action commenced in Kandiyohi County in October, 1925. Alleged negligence in lancing boil or abscess, thereby causing permanent injury to arm. \$20,000 damages sought. New Ulm attorneys brought this action but never brought it on for trial. In the latter part of 1927, Attorney Ossano, of Minneapolis, was substituted as attorney for plaintiff. He sought to amend the complaint by including allegations of x-ray treatments given by Dr. Anderson, alleging that the same caused an open, running sore on top of

the shoulder, causing permanent injury, rather than the abscess under the arm described in the first complaint. This open sore on the shoulder of the plaintiff is of course what causes her disability, rather than the abscess or boil described in the first complaint. This condition of the shoulder, however, existed before Dr. Anderson ever treated the woman, and, in fact, the woman came to him for treatment of this condition, and the lancing of an abscess in the region under the arm was incidental. The fact also is that Dr. Anderson did not give this woman x-ray treatments. We objected to the amendment, particularly upon the ground that it was the introduction of a new cause of action which was now barred by the statute of limitations. The matter was heard by the court at Willmar in February, this year, and the amendment was denied. The plaintiff thereupon failed to get the case upon the March term of court at Willmar, and, failing in the amendment, we are inclined to think this case will be abandoned. We believe it will be advisable now for us to put this case on the calendar to come on at the fall term, and if the plaintiff is not going to proceed at that time to move the court for a dismissal. The statute of limitations will have run then against commencing the action over again.

*Anderson vs. Ulrich.*

Hannah Anderson vs. Dr. Henry L. Ulrich of Minneapolis. There is nothing new to report since our last report of June 17, 1927, in this case. The action was stricken from the calendar in September, 1926, and no effort has been made by the plaintiff to place the case on the calendar or bring it on for trial. So far we have thought it inadvisable for us to put the case on the calendar for the purpose of having it called to secure a dismissal. Eventually that may be the advisable step to take.

*Gray vs. Griger.*

Action brought by Dr. F. D. Gray, of Marshall, Minnesota, through Attorney W. E. Kempton, against George Griger on account of services rendered on behalf of Mrs. Griger, now deceased. We have written Mr. Kempton twice within the last few months, but have received no reply, and we take it this action is still pending. We suggested that the action be brought on for trial at the last term of court because the counterclaim, we believe, can readily be dismissed. The counterclaim is brought by the husband, alleging death of his wife by wrongful act. Under our statutes, the only one who can maintain such an action is the executor or administrator of the estate of the deceased person, but in the counterclaim the defendant Griger sues as an individual. The statute of limitations has now run against the bringing of an action by the proper person, namely, an executor or administrator.

*Halter vs. Browning.*

Mrs. Dora Halter against Dr. William E. Browning of Caledonia, Minnesota. There is nothing new to report upon this case, except that the same is still pending and except that we believe this case is barred by the statute of limitations, and that plaintiff's attorneys have offered to dismiss, if Dr. Browning will re-

lease any claim for services he has against the plaintiff.\* Since that offer we have been unable to communicate with Dr. Browning because of his absence in Europe.

*DeGree vs. Norrgard.*

Robert DeGree against Dr. Henry T. Norrgard. This action was barred by the statute of limitations and has been dismissed.

*Hunt vs. Reihls.*

Nothing has developed in this case since the last report.

Trusting the foregoing serves your purpose, we are  
Very truly yours,

OPPENHEIMER, DICKSON, HODGSON,  
BROWN & DONNELLY

By (Signed) Stan D. Donnelly.

#### RECOMMENDATIONS

The Secretary wishes to introduce the following amendments to the Constitution and By-Laws:

That the Constitution be amended to read as follows, Article IV, Section I: Insert after the word Emeritus "or Affiliate"; after the word Honorary, "or Associate"; Section IV after the word Emeritus insert "or Affiliate"; substitute for 60 the figure "65."

By-Laws, Chapter I, Section III, insert after the word Emeritus, "or Affiliate"; after the word Honorary, "or Associate"; after the word Members, "and guests"; eliminate "and Visiting."

#### CONCLUSION

The Secretary wishes to state his appreciation of the interest and assistance given to him by President C. B. Wright; by George Earl, Chairman of the Public Health Education Committee; by W. F. Braasch, past President; by Frank Savage, Councilor of the first district; by H. M. Johnson, Chairman of the Legislative Committee, and by H. M. Workman, President of the Council.

E. A. MEYERDING, Secretary.

(Applause).

PRESIDENT WRIGHT: You have all heard this excellent report which I think Dr. Meyerding unfortunately felt he had to get through. There is a lot of meat in that report and it would have borne a good deal more time, in my opinion.

Dr. Billings, this comprises more or less the program of our society and I wonder if you have any remarks to make on it.

DR. F. S. BILLINGS (Chicago, Ill.): I think it is in keeping with what I said, that you are progressing and doing the right thing.

PRESIDENT WRIGHT: Would anyone care to discuss these reports, particularly the Secretary's report?

DR. GEORGE EARL (St. Paul): All I can say is that in addition to the wonderful series of Presidents we have had during the last few years, and on which undoubtedly what success we have obtained has been through their alliance with the Secretary's office, the Minnesota State Medical Association has had a Secretary in the person of Dr. Meyerding. I can't understand how we got along for such a long time without someone on a definite basis and giving a definite block of time to our work.

Of course Dr. Meyerding was particularly fitted because of his relations previously with city schools, in the World War, and with the lay organization. We can't give all the credit to him personally. He was one of those fortunate men who are lucky in their training.

In addition, and I can only speak for those I come in contact with, I used to think that the Secretary was a man who worked only certain hours, but I found Dr. Meyerding was willing to work to eleven and twelve at night if necessary. Dr. Wright and the other officers will bear me out. In emergencies he has given to his task much more than we would expect a private physician to. Too much credit cannot be given to Dr. Meyerding without in the least detracting from Dr. Wright's unusual work this year, and the four or five doctors who have preceded him.

PRESIDENT WRIGHT: I thoroughly agree with you that Dr. Meyerding's efforts are largely responsible for the progress of our Association at the present time.

We will now have the report of the Finance Committee, Dr. Dodge.

DR. F. A. DODGE (Le Sueur): The Finance Committee's report is in the report of the Secretary and the Treasurer and Auditor's report, and we find them to be correct in every detail and recommend that the Auditor's report be published.

I have a statement from the Minneapolis Trust Company showing the investment of our funds, and if you would like to have it read I will read it.

PRESIDENT WRIGHT: What is your pleasure in regard to this report? If you have to have it read, we will have Dr. Dodge read it.

DR. C. L. SCOFIELD (Benson): I move it be placed on file without reading.

The motion was seconded.

DR. F. J. SAVAGE (St. Paul): I would suggest that the doctor summarize the report and state the amount we have on deposit with the Minneapolis Trust Company.

PRESIDENT WRIGHT: I think there is a motion before the House and as this will all be published I will call for a vote on this motion.

The motion was put to a vote and carried.

PRESIDENT WRIGHT: Dr. Braasch, have you any discussion of this report?

DR. W. F. BRAASCH (Rochester): No.

PRESIDENT WRIGHT: Next we have the report of the President of the Council.

Dr. H. M. Workman read the report of the Council.

#### MEETING OF THE COUNCIL

June 10, 1928

Rooms L and N

New Nicollet Hotel, Minneapolis

A meeting of the Council of the Minnesota State Medical Association was held in Rooms L and N of the New Nicollet Hotel, Minneapolis, on Sunday, June 10, 1928, at 11:30 a. m.

Members present: Dr. H. M. Workman, Dr. F. A. Dodge, Dr. W. A. Coventry, Dr. M. S. Henderson, Dr. L. Sogge, Dr. W. H. Condit, Dr. F. J. Savage,

Dr. W. W. Will, Dr. C. B. Wright, Dr. G. S. Wattam, Dr. Earle R. Hare, Dr. E. A. Meyerding.

Drs. W. F. Braasch and H. M. Johnson as members of the Reference Committee were also present.

The minutes of the previous meeting were read and approved.

The reports of the Treasurer and of the Auditor were discussed.

The Treasurer is to forward a statement of the amount of money in the Minnesota Transfer State Bank to the Secretary, who shall draw a check in that amount to the First Minneapolis Trust Company.

Motion made by Dr. Coventry, seconded and carried that the Treasurer's report be approved by the Council as submitted.

Motion made by Dr. Sogge, seconded and carried that the Secretary furnish the members of the Council copies of an itemized report of the Miscellaneous and the Public Health Education Committee expenses.

The Treasurer's and the Auditor's reports were turned over by the President of the Council to the Finance Committee for them to submit a report for publication in MINNESOTA MEDICINE.

The resolutions and the reports reported on by the Reference Committee were discussed and referred back for them to make a report to the House of Delegates.

Dr. J. A. Myers, President of the Minnesota Public Health Association, spoke briefly of the coöperation of the Minnesota State Medical Association and the Minnesota Public Health Association.

President C. B. Wright suggested that the Council recommend a resolution to the House of Delegates endorsing the work of the Minnesota Public Health Association. The State Secretary is to forward this to the secretary of every local medical society.

The President spoke of the survey that is being made of the physicians, osteopaths, and chiropractors throughout the State.

The question of a member paying his back dues in order to be reinstated was discussed. It was the opinion of the Council that the local societies should dispose of this matter as they see fit.

The Secretary called the attention of the Council to an advertisement forwarded to him. It was the consensus of the Council that this is a question for the local society.

The question of Liens was referred to the Committee on Public Policy and Legislation.

Motion made by Dr. Coventry, seconded and carried that the name of Dr. Sanderson, first vice president in 1924, be included as follows in the published list of Presidents of the Minnesota State Medical Association:

Archibald MacLaren—1924\* (Deceased)

E. T. Sanderson—1924

The question of the collecting by the State Office of unethical advertising was discussed.

Motion made by Dr. Coventry, seconded and carried that the Secretary of the State Association be instructed that in his bulletins, to notify the local secretaries of the recommendation of the Council, that a

probationary period for new members be required, that it extend sufficient time to permit them to write to the office of the State Medical Association for such information as may be obtainable regarding all applicants.

The next meeting of the Council will be held immediately after the first meeting of the House of Delegates on Monday.

Meeting adjourned.

Dr. A. G. Liedloff took the chair.

CHAIRMAN LIELOFF: Dr. Braasch, have you or any one else a discussion of this report?

A motion is now in order to adopt this report of the Chairman of the Council.

DR. J. M. ARMSTRONG (St. Paul): I move that the report be adopted and placed on file.

DR. L. SOGGE (Windom): I second the motion.

The motion was put to a vote and carried.

CHAIRMAN LIELOFF: We will have the reports for each of the districts. The councilor of the first district.

DR. W. W. WILL (Bertha): We had the one meeting as Dr. Meyerding announced in his report. We had an enthusiastic meeting and we think it will be of great good and we will work more in harmony for the State Association.

DR. L. SOGGE (Windom): I don't know that I have anything special to report except I wish to draw attention to this membership in our society, in southwestern Minnesota for example. There are at least four men listed who should belong to our society. Some have moved out of the state, but I imagine they registered here simply to keep their license alive. There may be one or two that the state society wouldn't want.

In the other societies that belong in my district I think nearly all are members.

CHAIRMAN LIELOFF: The third district, Dr. Workman.

DR. H. M. WORKMAN (Tracy): I don't know as I have anything particular to report. Unfortunately I have been unable to visit the societies in my district so far this year. I started in January by breaking a leg and before I got over that I got the influenza and was laid up with that. I am here now and in good shape.

Some day I am going up to Benson and see my good friend Scofield and try to have a meeting at that time, but for a while I will have to stay at home.

Our membership, according to the list that was sent out by the Secretary, in my own county society shows: three or four men who have left the county; some we wouldn't take in; and I think there were about five or six on the list that ought to come in that wouldn't. I think that is true of the other districts. Secretaries have told me they have tried to get the good men in, and there are some bad men they wouldn't have, and I know they wouldn't have them in my county.

CHAIRMAN LIELOFF: The fifth district, Dr. Savage.

DR. F. J. SAVAGE (St. Paul): I have no special report to make. In Stillwater, Pipestone, Northfield, and in the region of Pine City there has been no special council or district meeting of all that associated group.

There have been various things from time to time that have come up for smoothing over or adjustment of some kind. Outside of that I have no special report to make.

CHAIRMAN LIEDLOFF: Dr. Dodge of the fourth district, we skipped you somehow.

DR. F. A. DODGE (Le Sueur): I have no report of special interest.

CHAIRMAN LIEDLOFF: The sixth district. Dr. Condit.

DR. W. H. CONDIT (Minneapolis): I have no special report. The family seems without any application for divorce anywhere. I was in St. Cloud two weeks ago, more as a medical scientific program member than the councilor member, and there was no request to settle any difficulties there. They seemed to be running smoothly. The members of the surrounding districts were present at the meeting.

I want to remark that the non-membership list appears to be rather large, very nearly fifty per cent, but it isn't fair to analyze it. The figures show over 400. There are about thirty-seven now in application for membership. It requires six months as you know to become a member. There are about twenty-eight internes who are registered now but not eligible for membership. There are seven in institutional work and a few have moved, so that it brings up those figures as I remember to 108 or 109, which shouldn't be considered there as possible candidates in our society.

I know that some on that list of nearly 300 should be members and I hope within the next year to try to get some more in.

CHAIRMAN LIEDLOFF: The eighth district, Dr. Wattam.

DR. G. S. WATTAM (Warren): I have no written or special report to make. We have had no councilor district meeting this year.

I communicated with two of the three Secretaries in our district and did not get a favorable response from them in regard to reporting such district meetings.

In regard to the non-membership, I believe that depends largely upon the secretaries of the individual societies. In our own society, the Red River Valley, I think we have about all the members it is possible to obtain.

In analyzing the men who are licensed and those who do not hold membership in the county society, I would say that we probably have four men who are licensed within the limits of that county society who do not hold membership and whom we would not choose to have in our society. The balance, which would leave some fifteen I think, are mostly among the older men who have never attended medical societies and are quite a distance away from meeting places where they are usually held and it is difficult to get them into the society.

I think we have a very efficient secretary and I think he has done about all that is possible in the Red River Valley to secure memberships. Our membership ought to be increased at least to the extent of possibly ten or fifteen per cent.

CHAIRMAN LIEDLOFF: Dr. Coventry of the ninth district.

DR. W. A. COVENTRY (Duluth): The ninth district is flourishing. I have had no complaint during the past year from any of the members as to any dissatisfaction with the state society.

The county society is flourishing. Our membership percentage is very high and everything seems to be very healthy. We have had a regional postgraduate course during the past year and we hope to have another one next year, possibly two in this district. We think that is probably one of the best things to submit for membership and stimulate medical interest that the state society has put out in the last few years.

CHAIRMAN LIEDLOFF: Is the Credentials Committee ready to report?

DR. F. A. ERB (Minneapolis): There are fifty-two delegates present, every county is represented, and all the credentials are O.K. There are probably one or two more who have come in since the report was made.

DR. E. R. HARE (Minneapolis): I move that the House of Delegates now legalize all transactions that have taken place preceding the report of the Credentials Committee.

DR. A. G. SCHULZE (St. Paul): I second the motion.

The motion was put to a vote and carried.

CHAIRMAN LIEDLOFF: We will now have the report of the Editing and Publishing Committee.

DR. J. M. ARMSTRONG read the report of the Editing and Publishing Committee.

#### REPORT OF THE EDITING AND PUBLISHING COMMITTEE, MINNESOTA MEDICINE

Your Editing and Publishing Committee is pleased to make the following report on the publication of MINNESOTA MEDICINE, which is now in its eleventh year:

During the period from May 1, 1927, to April 30, 1928, twelve issues of the journal have been published, totalling in all 1,216 pages or an average of 101.3 pages per month. Of this number 792 pages were devoted to reading matter and 424 pages to advertising. Of the 122 articles published 19 were case reports, showing a nice increase in this department. The total number of illustrations published was 230 or an average of 19.1 per month. Among the illustrations we are pleased to call attention to the fact that there were 6 colored plates, a reproduction of an old wood cut and two full page photographs, one being a group picture. The printing of the colored illustrations meant an added expense, but one well worth while.

Beginning with the March, 1928, issue, MINNESOTA MEDICINE took on a new form of binding and a different style for the outside cover. A few minor changes were also made on the inside pages. The names of the editors were transferred from the outside cover to the Editorial page, giving room for the full table of contents to be printed on the cover. The case reports were moved forward in the journal, being placed immediately after the leading articles ahead of

the Editorials. A new page devoted to communications from the president of the State Medical Association and termed the "President's Letter" has also been added as a monthly feature. An effort is being made to obtain more articles of economic interest for publication in the journal and several have been printed in MINNESOTA MEDICINE this year. Letters of commendation received from members as well as non-members of the Association on the changes recently made indicate that we are moving in the right direction.

The circulation of the journal is reported as follows for the month of April, 1928:

Members (1928 dues paid).....	1,977
Members (1928 dues unpaid).....	133
Outside paid subscriptions.....	387
Miscellaneous—exchanges, complimentary, advertising copies, etc.....	253
Total .....	2,750

Cash receipts and disbursements for the period from May 1, 1927, to April 30, 1928, were as follows:

CASH RECEIPTS	
Advertising .....	\$8,250.55
Subscriptions—Non-members .....	374.19
Illustrations .....	231.43
Subscriptions—Members .....	3,954.00
(Based on a paid-up membership of 1,977 at \$2.00 a member).....	\$12,810.17
DISBURSEMENTS	
Journal Expense, May 1, 1927, through April 30, 1928.....	12,368.95
Surplus .....	\$441.22

The above report covers only the actual cash receipts and expenses for the year plus the credit of \$2.00 for each paid member of the Association.

Respectfully submitted,  
EDITING AND PUBLISHING COMMITTEE.

President Wright resumed the chair.

PRESIDENT WRIGHT: Has the Reference Committee reviewed this report?

DR. W. F. BRAASCH: The Reference Committee has reviewed the report and we have no alterations to recommend. We commend that portion which deals with the increase and the interest in the economic matters which they have so ably done this past year.

The Committee therefore wishes to move the adoption of this report as read and that the financial report be referred to the Auditing Committee.

DR. H. M. WORKMAN: I second the motion.

PRESIDENT WRIGHT: Is there any discussion on this report? There is no intention on our part to cut off or suppress discussion. If any man has any suggestions for our State Journal, I am sure the editors and the committee would be exceedingly glad to get such suggestions, constructive criticism or any kind of criticisms if there are any.

The Journal is certainly a splendid publication.

If there is no discussion on this report I will call for a vote.

The motion was put to a vote and carried.

PRESIDENT WRIGHT: The next is the report of the Necrologist. Dr. Hansen is not present, is she?

We will then go to the report of the Committee on Hospitals and Medical Education, and include the report of the Annual Congress on Medical Education, Medical Licensure, Public Health and Hospitals.

Dr. N. O. Pearce read his prepared report.

REPORT OF THE COMMITTEE ON HOSPITAL AND MEDICAL EDUCATION OF THE STATE MEDICAL SOCIETY FOR THE YEARS 1927 AND 1928

The report of the Committee on Hospital and Medical Education this year is rather brief. This work has been going on steadily, and, in the minds of the committee, making satisfactory progress.

An Extension Course since the last report has been given at Windom, Pipestone, Worthington, Fulda and Slayton during May and June, 1927.

A second course was given at Moorhead and Fergus Falls during September, October and November, 1927.

A second course was given at Marshall and Tracy during September, October and November, 1927.

A second course was given at Pipestone, Slayton, Fulda, Luverne and Jackson, during October and December, 1927.

A second course was given at Duluth during October, November and December, 1927, and January, 1928.

A course was given for the Ramsey County Medical Society, St. Paul, during February, March and April, 1928.

A third course has just been completed at Marshall, Tracy and Tyler, running during April, May and June.

The attendance at these courses and the fact that most of them are the second, and some the third, that have been taken in certain communities would indicate that they are meeting a definite need and are of value to the local physician.

The Chairman of your Committee has attended meetings of the Upper Mississippi Medical Society, of the Wright County Medical Society, the Rice County Medical Society, the Steele County Medical Society and also the Ramsey County Medical Society and talked with the members, explaining the object, methods, and details of the organization and the conducting of Extension Courses.

Courses are now being contemplated at Wadena, Buffalo, Faribault, and Northfield. Since this report was written there has been a course organized at Mankato, which will probably go on in September. We have also had a committee appointed in the Upper Mississippi Valley Medical Society as they are contemplating a course up there. The committee has just recently, with the aid of the Extension Division of the University, sent out cards of inquiry to the 200 members of the Extension faculty who are prepared to offer lectures in these courses. With very few exceptions, the members of the faculty have signified their wish to continue with this work. Recently a number of new men have been invited to join the Extension Medical faculty.

A new and revised booklet has been prepared this spring, copies of which have been made available for the delegates today.

We thought it was time to check back and see if they were still interested. We are gratified that those who had been doing this work and on the list were glad to continue. The little new book is a revised edition which tells all the details of organization and gives the list of faculty and subjects which they are prepared to present.

The committee has held a number of meetings and contemplates no immediate change in the present program but we feel that there are large numbers of medical centers in the State that have showed no interest in this program. We feel that the program has much to offer that is of value and that the interest in these courses must be in some way aroused in the districts which have not as yet responded. Suggestions from the House of Delegates will be appreciated.

Writing or asking to have committees appointed and that sort of thing doesn't seem to quite meet the situation, but where we have had time to go out and meet with the local County Medical Society and see that they thoroughly understand the program almost without exception (I think so far only one case) a course has been organized as the result of such a visit. I hope before the year is over that I may have an opportunity to meet with a considerable number of the County Medical Societies and tell them personally of the plan and make clear how they can take advantage of it. It seems when we do this we get good results.

Respectfully submitted,

N. O. PEARCE, Chairman.

(Applause.)

PRESIDENT WRIGHT: Dr. Braasch, have you any discussion?

DR. W. F. BRAASCH: The Reference Committee has reviewed this excellent report and considered the various suggestions made and particularly the one in which the Chairman desired that an effort be made to arouse greater interest in some of the districts that have not taken up these courses. It seems to me that this should be more widely adopted and that it could still be developed further. Various methods were discussed whereby this could be brought about and they suggested the following:

In the first place, that a flat rate or equalization fee be established for these courses by the state association and that this be divided pro rata among societies asking for the course. In this way it is hoped that the expense shall be more equalized among those who live close to the cities and those who live at a distance, and furthermore that the choice of the men who live far away and who live nearby in the different societies could be made. In other words, equalize the expense.

The other suggestion was that the State Association assume all or part of the expense of these courses, and the objection of course to the latter was that it places

additional burden on the State Association to begin with. Furthermore, they may not arouse the interest, but the portion which reads, "The State Association might assume a part of the expense," was thoroughly discussed.

However, in conjunction with the council it has agreed that probably an equalization fee or a flat rate which would be divided pro rata would be the comfortable measure. We have no particular recommendation to make for either of these, but we would certainly welcome a discussion from the members as to the best methods for bringing it about. Certainly it ought to be developed to a further extent. There is no criticism on the part of the committee with their efforts.

I move you that this report be adopted as read.

DR. G. S. WATTAM (Warren): I second the motion.

PRESIDENT WRIGHT: I would like to say that this is one of the activities of the State Association which has attracted the interest of the medical profession throughout the country. The State Medical Association is offering these courses, and wherever they have had a course they want another and some have had as many as four.

The State Association is exceedingly anxious to get the courses in districts where they have not been before.

I would like to hear a discussion of these three suggestions of Dr. Braasch. Do you want the State Association to pay for these courses such as the State of Michigan is doing according to Dr. Braasch? Do you want the State Association to take care of any part of the expense? The flat rate appeals to a good many people; I mean it is so easy to explain when you go out to talk before a society as we have had to, Dr. Meyerding and myself. They say, "What does it cost?"

"Doctor, I don't know that exactly."

"What is the railroad fare to Minneapolis and back, how much does it cost for lunch?" and so forth.

The Extension Division of the University of Minnesota are experts on this kind of thing and we have had courses enough in various parts of the state now to figure out a flat rate which will cover the expense. Don't you think so, Dr. Pearce?

DR. N. O. PEARCE: Yes.

PRESIDENT WRIGHT: I am going to call on some men to discuss this question.

DR. C. B. DRAKE (St. Paul): I would like to ask Dr. Pearce what the difference in expense to the various county societies is; whether it amounts to very much?

DR. N. O. PEARCE: The difference in expense is entirely a matter of transportation. Of course way up in Bemidji and Fergus Falls I think it depends a little on how many lectures they have, and how long the course extends, but the cost is varied between \$10 and \$20 for each physician taking a course. If you come closer in like St. Paul, I think it is one dollar apiece; in Duluth it would be a considerable sum of money.

We have paid as much as \$600. The later courses have a cost of only fare and transportation.

Certainly the fellows in St. Paul would be very glad to pay \$10 for that and I think a flat rate might be very well established which the State Association could back and not cost the State Association very much. These courses have never cost the State Association anything so far. We have had a little money set aside for our work each year but so far we haven't used it. I hope they keep on setting it aside. I don't think we have drawn a cent on the money that was set aside for us last year.

I think the State Association could very well afford to financially back this thing a little bit. Really after all it is a question of getting the idea over to fellows who have never given it any thought. There are a few of the medical societies so small that it is a little impractical for them to go to the expense of having these. If there was some flat rate fixed up so that the State Society was back of it the smaller groups would be able to take advantage of it.

DR. W. A. COVENTRY (Duluth): I would like to testify to the benefits derived from these courses put on by this committee throughout the state.

In Duluth we have had two courses, one each year, and if you will listen to that report and read it carefully you will find that those who have had the course repeat it, because it is the best proposition to get a postgraduate course in your home town at a minimum amount of expense. Aside from the knowledge you get out of it you also cement the membership not only in a social way, but you also cement it in a medical way. The medical knowledge and facts you get make you feel a little more on a par, which helps a great deal.

You get the impression possibly that this has to be sponsored by the county society. I don't personally believe it is true. In Crow Wing County they have members from International Falls. It is impossible to pull those men down to a meeting. We have been very fortunate in getting men from isolated districts to our meeting, driving 100 or 120 miles, because they get their money's worth.

As to the standing of expenses, I personally believe they should be borne by the men who take the course. It may be possible or necessary for the state society to give a little aid, but to let the state manage the whole course, I fear you are going to get into a lot of trouble and a tremendous amount of expense.

My idea has been that you take a group, for instance Chisago and Aitkin, at a radius of some thirty or forty miles, you could draw them in here for your meetings. For instance you could draw a circle and bring them into Wadena to the meetings. It doesn't necessarily have to be some county society; it is a group proposition. I am sure if anybody starts it they will keep going this year and the year after.

DR. A. G. CHADBURN (Heron Lake): I wish to say that we have had two sessions of this course. The first one held at Windom and Pipestone. Both places belong to our society. It has done a lot to join our members socially and professionally. I happened to

be in charge of the work the last year and I know how it has helped out. It cost us between \$20 and \$25 for each lecture. When we get two each night it is between \$40 and \$50 to get them there and back.

We meet in different towns in our district, which is six southwest counties of the state. We thought we might get a lecturer to come one night and the second night get another one. That would make the charges higher yet but we got our men to come, those who would drive some ninety miles from one corner to the opposite corner and change the meetings around.

The flat rate might appeal to us. I heard some of the men from Tracy up in Lyon County object to it. When we would ask for one or two men, sometimes they would slip in a substitute. Sometimes he would be somebody we wouldn't care for or didn't want, somebody we call a weak sister. When a man drives a long way and pays a good price for it he is disappointed. We got that two or three times and they were disappointed in the men.

I understand that is hardly a fair criticism because you men who are on the faculty, rather than disappoint us, have to work that out and sometimes you can't get away from it. I question whether it wouldn't be as well not to send anybody as to send somebody the group doesn't ask for.

PRESIDENT WRIGHT: This list has been gone over carefully and there may be some "weak sisters," but still they stack up pretty well.

DR. A. G. CHADBURN: I probably shouldn't have said that, but what I mean is this: If we ask for a lecture on gynecology I believe it is a poor idea to send out somebody in an altogether foreign subject to that. For instance, he asked for the one man and he got it in a different subject. We pick out the subjects and if the committee would send a man along the same line that would be all right.

PRESIDENT WRIGHT: I agree with you that substitutions are bad, and I think Dr. Pearce tries in every possible way not to do that. I am sure that it might be a good idea, for instance, for the society to arrange rather than to omit lecture, and have another one on another subject. That of course could be arranged.

DR. E. T. SANDERSON (Minnetonka): Lyon and Lincoln Counties wish to recommend these courses. We have just finished our third course now and we began three years ago in the fall. We ran into the winter and bad weather interfered somewhat so this year we put our course on in the spring and have just finished. We want to recommend the course to you and I will give you some little idea of how we handled it.

When we first thought of the matter we decided to go on with it as an experiment and each member of the society paid into the treasury \$25. We had a wonderful course alternating between Tracy and Marshall, which were the most central points. The following year we took down the course again. We had created a treasury and each paid \$15, as \$25 was too much, and it was very successful. Then we changed this spring and started our course early, and were through just before the Medical Society meeting. This year we paid \$7.50 and we still have the treasury.

With reference to the men you have sent us, it has been very, very satisfactory. We have had some wonderful courses. The first and second years we had two lectures each night with demonstrations. We found that was a little heavy and we didn't get home until one or two o'clock in the morning, so we have cut it down to one. The principal reason for our success is that we have a dinner hour. We have the dinner at one of the hotels in Tracy or Marshall, and immediately following the dinner we have the clinic and the P.-G. course. It is worth driving a long way to hear.

Dr. Pearce has been very fine. We have selected the men we wanted and only once or twice, and not more than twice, have substitutions been made and they have been good.

DR. B. S. ADAMS (Hibbing): We had the course in Duluth this winter in physiology and brain structure and it was very good. Those of us who took it were very glad to pay the \$5 it cost us. Personally I don't think we can load this on the state society's expense. I think everyone who takes the course should pay for it himself. An equalization fee would work out to the advantage of those who live in the outlying districts but hard on those who live in the twin cities. Those who live out further would not object but the city perhaps would.

There is one suggestion I would like to make, that would be applied perhaps to the leaders of the county societies rather than to Dr. Pearce. Those of us who have to travel from sixty-five to eighty-five miles and back each night to take a course find it pretty hard in real cold weather or when it is stormy. I think it would be better to have the courses in the spring and in the fall rather than during December, January and February. I had to drive seventy-seven miles and back each night when I took it and sometimes it was pretty hard to get there.

The only criticism I have heard among our fellows was when we took the course of physiology some of the lectures were pretty deep, perhaps a little over our heads. I think we should keep them as practical as possible.

PRESIDENT WRIGHT: Hibbing and Virginia are splendid places to put on a course.

DR. G. S. WATTAM (Warren): I believe there is something to be said in favor of the equalization fee, not but that those profiting by these courses should pay, but you will notice so far that the more sparsely settled districts are more in need of it than the more thickly settled districts. I believe we have more physicians up in the Red River Valley County Society who are in need of these postgraduate courses than you have in Duluth or in St. Paul, or even down in Tracy, because so many more of them do not attend the medical society meetings.

For instance, the Upper Mississippi Valley or the Red River Valley County Society embraces a territory 175 miles long. The physicians are far apart, and I believe one reason why a course has not been put there is because of the long distances the physician would have to travel and the probable expense. No doubt

the physician would be willing to pay for these courses but it seems to me that there might be some arrangement made by which the physician in the Red River Valley or the Upper Mississippi Valley would not have to pay so much more than the physician at Fergus Falls or in the more thickly settled districts.

DR. L. SOGGE (Windom): We want to be very careful how we are talking here today. We are talking about equalization fee. You folks must remember that it is unconstitutional and if you want to do a thing of that kind, for goodness sake don't call it equalization fee. Call it flat rate or anything you want, but not equalization fee.

I don't think you can reach any conclusion here today. It is a wide subject and we ought to be careful. I, for one, feel that we could leave it to the chair to appoint a committee of three or five to make recommendations to the next House of Delegates. That suggestion comes to me because we don't know how much we would be involved, and I think someone ought to study it and lay out a regular plan before we take on a thing of this kind.

DR. O. T. SHERPING (Fergus Falls): It would be very generous to the outlying districts and that would include also our district, to have equalization. With you it would be very expensive to settle onto the physicians of, say, Minneapolis and St. Paul, the extra expense, as they have life in that medical center where they would not really need these lectures.

I therefore suggest that we continue in the same manner as we have done, each one pay his share of the expenses in the local district. We have paid about \$20 apiece for the lectures. Personally I feel that even two or three of those lectures fully repaid me for the \$20. If you go away for a postgraduate course it would cost you much more, while possibly the regular fare would be more than just the small amount that we pay. I don't think anyone who is interested in his education will object to the amount that will be charged for those lectures.

DR. GEORGE A. EARL (St. Paul): I thought possibly the time had come when Dr. Sogge would make a motion referring to the present course. I was going to make a motion to refer it to the Council or such committee as the president may deem fit.

DR. W. F. BRAASCH: The report could be amended to read that the method of financing these courses could be referred to the Council.

DR. GEORGE A. EARL: I should like to make a motion then that the question of financing these courses be referred to the Council, and, I should like to say, with power to act, and have that confidence in the Council.

The motion was seconded.

PRESIDENT WRIGHT: The amendment is before the house for discussion. I am sure the Council would not wish to put a burden on the State Association without due consideration and the backing of the House of Delegates. Are there any objections or does anyone have a fixed and definite opinion as to how the thing should be handled? If we want to take a

vote and make suggestions to the Council I think it should be done here.

Dr. C. P. ROBBINS (Winona): Our great problem is to get a meeting of the members. I have been a member of the county society thirty-one years, but the last several years we can scarcely get a quorum, especially on the first of January.

About five years ago our hospital was standardized and we had the county society meeting the same night as the staff meeting and what remnants there were of the county society blew up and we had no county society. No one stayed for the county society meeting because there wasn't a quorum left. We don't know why it is this way but we would like to have help.

These courses have been suggested to us and we didn't have a quorum to vote on them. I think it would be a very good thing to have a course at Winona. We have a membership of twenty-two or twenty-four, but we cannot get more than four or five out to discuss anything. That is our problem of getting a full meeting of the county society.

PRESIDENT WRIGHT: The officers of the State Association are anxious to do everything they can to cooperate with the Winona Society.

Dr. H. M. WORKMAN (Tracy): Dr. Robbins, I might say this: I think if they are trying to run it as a county idea it is wrong; run it as a group idea. That is what we did. The county society is only responsible financially. I happened to be the secretary of our local society, as Dr. Sanderson would say, and we called a meeting of the society and of men outside of our county society, members of other county societies, and a few gathered, but not a quorum of our society by any means. We decided we would put on this course, and the first time we said we would make it \$25 and we collected the \$25. I have forgotten how many members there were but we got \$25 from every man, and after it was decided to make it \$25 we sent a notice to every member of this society and of the surrounding towns who wanted to come in to send in \$25, and a great many who were not at the meeting sent the \$25.

The next year at one of the meetings we decided to give another course and asked for \$15. Of course we carried a surplus all the time in the treasury. That is a separate fund and is not kept in the society fund at all. This year we reduced the amount to \$7.50 because we had such a large surplus, and were talking about making it \$5. We made the \$7.50 but I think reducing it that much we lost a few members; possibly it was too cheap.

We never had a better course than we had last year. We got every man we asked for; the substitutions were in previous years. We have this surplus and are going to do the same thing next year, but will have it in the spring and summer months when the roads are better and everybody can come in.

I will say to Winona County, if any one of the doctors down there, or three or four of them, say we are going to give this course and ask these men to come in and go outside of the local society to get them to come in, you will not have any trouble.

Dr. J. M. ARMSTRONG (St. Paul): I didn't intend to discuss this at all. As a matter of fact I didn't attend when we had this course in St. Paul, but Dr. Robbins just mentioned something here. He said that he had difficulty in getting a meeting of his county society, and Dr. Workman mentioned getting this up as a group.

As I understand this, this is a thing for the State Medical Society, which is made up of component county or group societies. The reason that the Doctor can't get a meeting of his society and the reason we have trouble in getting the meetings of our societies is that hospital staff meetings and various other societies are a curse to the county society. The men feel they have to go to their hospital meetings and so forth, because they may be put off the staff, but they won't go to the county society because they don't care to attend a medical meeting one or two or three nights a week.

I think if this is a matter of the State Association, it should be up to the county and group societies, component societies of this Association, to take charge of this thing and not be made up of groups chosen by the Association, but should be a society matter.

PRESIDENT WRIGHT: This thing has been pretty well discussed and I think you have gotten most of the ideas. I think it has been very interesting.

Dr. Liedloff tells me that at Mankato they have two men taking the course who are not members. They feel it is good business; that this is education whether they are members or not. I feel like Dr. Workman, that this is educational propaganda, a little different from the organization itself. In my opinion it is the greatest stimulus to the organization in the local and community. Get a course on and you will see your organization go up.

If there is no further discussion on this amendment I will call for a vote on it.

The amendment was put to a vote and carried.

PRESIDENT WRIGHT: We will now vote on the original report, the motion to accept or adopt this report.

The motion was put to a vote and carried.

PRESIDENT WRIGHT: I want to introduce Mr. Jones, who is representing the Gorgas Memorial Fund. He has consented to come here and tell us something about organization.

Mr. Robert O. Jones gave a most interesting address on the subject of medical economics (to appear in a later number of MINNESOTA MEDICINE).

The audience arose and applauded.

PRESIDENT WRIGHT: I am sure we are quite convinced of the fact that when Mr. Jones undertook to organize that health league out in Washington it went over.

Dr. Myers, President of the Minnesota Public Health Association, is here. Our Public Health Association in this state, under the careful management of Dr. Myers and Dr. Meyerdling, is practically doing the thing today that the Health League of Washington is doing. I mean they are trying to direct the information to the public.

I would like to have Dr. Myers say just a word about the work he is doing in the Public Health Association.

DR. J. A. MYERS (Minneapolis): Mr. President and Delegates: There is a movement on foot, as Mr. Jones has pointed out, throughout the country that appears to threaten the private practice of medicine.

A number of years ago the Red Cross instituted the sale of a Christmas Seal known as the Red Cross Seal. It wasn't long after that until the National Tuberculosis Association took this over and has since sold the seal under the name of the Tuberculosis Christmas seal. In the beginning it did not seem probable that this seal would be the source of any great financial revenue. However, it has been sold to such an extent that approximately \$5,000,000 is collected every single year in this country from its sale. In the state of Minnesota last year the sale of the Tuberculosis Christmas seal amounted to \$170,000.

That money is to be expended primarily in tuberculosis work, but that may be interpreted rather broadly so as to include a good deal of public health work throughout the state, since the betterment of health in general reduces the opportunities for tuberculosis to develop.

Unfortunately just at a time when a considerable sum of money becomes available for expenditure in this way there are a number of people who attempt to get control of that money and use it for personal gain, formation of fads, etc. That is precisely what is being attempted in various parts of this country.

Some time ago while talking with Doctor William Charles White of Washington, D. C., he told me of a conversation he overheard while riding on a train in the western part of this country. The conversation was between two women, and after one of the women left he engaged in conversation with the other. He didn't tell her he was a physician, that he was interested at all in the tuberculosis movement, but he learned that she was the executive secretary of the Tuberculosis Association of her state and that she was using the funds to promote Christian Science in that state, in which she was an ardent believer. An actual occurrence. (Laughter.)

I have heard that something has occurred in my native state which is practically as bad. It has come to the point where a lay society is spending the money that is collected through the sale of seals to employ full time physicians, not to go out and coöperate with the physicians in their private practice, but to actually diagnose and treat, and all too often interfere with the confidence of the public in the local physicians.

In the state of Minnesota there have been some mistakes made in the past; it is nearly impossible to avoid them in the organization of an association of this kind. In the past there were such happenings as this: Clinicians would be sent out who did not have the right attitude toward the private practice of medicine, perhaps physicians who had never practised medicine, and when they arrived in the local communities, patients would be brought to them by nurses, lay workers, and sometimes by physicians, and after

they had been examined they would actually be told that their local physicians were not capable of diagnosing and treating that particular disease when, in reality, we know there is no disease, with our present knowledge, that is so easily diagnosed as pulmonary tuberculosis. Such happenings resulted in a great deal of ill feeling among local practitioners.

With the election of men of vision such as Doctor C. L. Scofield of Benson and Doctor H. Longstreet Taylor of St. Paul to the presidency of the State Public Health Association, came an attempt to put an end to these unfortunate happenings almost immediately. At present it is the policy of the Association to send out no clinician who will not coöperate with local physicians. If we find a clinician is not coöperating we have no further use for his services. Our clinics are held for educational purposes and we are fully aware of the fact that a program for public health education which does not give the practitioner of medicine a prominent part must fail.

I might cite a case in a town not so very far from here. I happened to be holding a clinic there a few years ago and a patient came in and gave a history something like this: "A few weeks ago I went to my local physician. He told me I had tuberculosis and said I should go home and get to bed and stay there. I went home and went to bed. My wife happens to be the friend of a chiropractor's wife, and they have since been talking to us, and they tell me the only thing to do is to get out of bed and take exercises instead of lying there resting. So I came over here to find out who is right, the chiropractor or my physician." I took twenty or thirty minutes to talk with that man and I know I convinced him that he should return to his physician who knew the case and who knew something of the prognosis. I advised him to remain on treatment just as long as his physician felt it was necessary. I have talked with the physician a number of times since and the man did what I advised him to do.

That is the sort of thing our clinicians are trying to do everywhere they hold clinics; it is a part of our educational program. In other words, we want them to inspire the confidence of the people in their local physicians.

In order to make the State Public Health Association as helpful as possible in the betterment of health, it is absolutely necessary that every physician in the state coöperate. It is possible, through having Doctor Meyerding as Executive Secretary of the State Public Health Association and Secretary of the State Medical Association, to bring about the coöperation that will make conditions practically ideal.

The physicians of some communities have been approached by a group of people who are absolutely opposed to the practice of medicine, some of them followers of members of cults, and are told that the Public Health Association is a private concern and that it is absolutely wrong that any part of the funds collected from the local Christmas Seal Sale should be sent to this organization. That has resulted in the withdrawal of a few County Health Associations from

the State Association, and, unfortunately, in one or two places the support of the physicians has been withdrawn from the State Association. However, as soon as the physicians learned the real facts, for the most part they have taken the right stand with regard to the State Association.

There are several reasons why a certain percentage of the money collected in local communities is sent to the State Public Health Association. There are some communities in this state, some counties and some districts, where there are very few doctors and where there is a good deal of disease, including tuberculosis. I spent five days in the Lake of the Woods region last summer, where there is just an occasional doctor. There are quite a number of people located in those counties and they are not getting medical advice; they are not getting education as regards the treatment and the prevention of disease. Among the Indians there, and the Whites for that matter, there is a great deal of tuberculosis being spread which might be prevented.

The Minnesota Public Health Association receives a certain percentage of the money collected from the sale of Christmas Seals from various counties, and this Association in turn sends five per cent of it to the National Tuberculosis Association.

The National Tuberculosis Association takes this five per cent and uses it in states as we use it in counties that are not properly organized and not properly equipped. The Minnesota Public Health Association feels that the only way it can accomplish the most and teach the people what they should know about public health and prevention of disease, is to have its work approved by and directed by the medical profession. (Applause.)

Dr. Braasch read a resolution introduced by the Public Health Education Committee.

#### RESOLUTION

##### WHEREAS:

1. The essential part of public health work being preventive medicine, there should be no failure on the part of official and unofficial health and welfare organizations to recognize the importance of the practicing physician.

2. All those associated in the conduct of public health activities must recognize fully that preventive medicine is the doctor's rightful field and that laymen must at all times look to the medical man for guidance and leadership therein.

3. Public Health work involves three participating factors—lay organizations, official governmental agencies, and the members of the medical profession.

4. The evolution of a health program should be the evolution of medical forces. It is the duty of the physicians to assume leadership in the organization and management of a health program.

5. Lay organizations are needed. Their coöperation is to be welcomed by the physicians. They are needed for the great educational work they can do, for their influence on public opinion, legislation and laws, and in many other ways. But preventive medicine must be controlled and guided by the medical men.

WHEREAS, the Minnesota Public Health Association and its component County Public Health Associations are complying with the above principles, be it therefore

RESOLVED, that the House of Delegates endorse the present program of the Minnesota Public Health Association and urge the medical profession and its component medical societies to coöperate and support the Minnesota Public Health Association in all its activities, and that the secretaries of the county societies call the attention of the members to these resolutions.

DR. W. F. BRAASCH: I move its adoption.

DR. H. M. WORKMAN: I second the motion.

PRESIDENT WRIGHT: Before we vote on this resolution it is of course open for discussion and we would like to hear from any one on the subject who cares to talk about it.

DR. C. P. ROBBINS (Winona): May a copy of the resolution be sent to the secretaries of the societies so that the societies can have action on it?

PRESIDENT WRIGHT: You mean a copy of this resolution?

DR. C. P. ROBBINS: Yes. We meet the first of October. We have always had a Public Health Association in Winona County and I think if the resolution is read to the members of the society we could harmonize.

SECRETARY MEYERDING: We will comply with the instructions.

PRESIDENT WRIGHT: I would like to call on Dr. Locken, Vice President of the Minnesota Public Health Association.

DR. O. E. LOCKEN (Crookston): I rather hesitate to keep on the subject after twelve o'clock. It has been my privilege to be working as a hobby in matters of public health in this state, having served as president of the State Sanitary Conference, the State Association of Health Officers, having been vice president of this Public Health Association, and also having been chairman of the League of Minnesota Municipalities and where I have had the opportunity to present to the municipal officials of the state the achievements of scientific medicine.

Since that committee was organized we have been watching a very definite change in the interest on the part of Mayors and Aldermen in the cities of this vicinity, in matters of public health and scientific medicine. In connection with that I want to say here that the most important thing we have right now in this new development of public health education is to keep up our relationship which we now have with the medical profession of the Minnesota Public Health Association in its contact with the public. This last year there has been some reaction in the state on account of such medical propaganda as Mr. Jones mentioned.

There is one other side light that ought to be brought in. It is probably a dangerous subject but ought to be mentioned. In the past few months units under the division of hygiene and infant and maternity welfare of the State Board of Health have been going around

through the state to organize the special County Health Association. That is a very important thing, but there has been one reaction to that. The tendency has been on the part of those organizations to work with the people who are discontented with the system that has been in vogue in the past, that is, the work of the Minnesota Public Health Association.

Just this week I saw a letter from the State Board of Health in this department, bringing out the idea that that organization is the only logical contact the medical profession has with the public. I wouldn't want in any way to reflect on the work they are doing because I have the deepest friendship for Dr. Chesley, Secretary of the State Board of Health. Wherever this new tendency of developing a new Public Health Association in each county is interfering with the organizations already established, then it becomes a dangerous thing. We ask physicians in our various communities if an attempt should be made to keep that matter straight. It is straight as far as the State Board of Health is concerned because they want to limit the work to infants and maternity hygiene.

In reality it is going further than that. Where we keep in close contact with that we can prevent disruption of common interest. Again I would like to emphasize, now that the Minnesota Public Health Association and the Minnesota State Medical Association are closely in contact, that one is dependent upon the other and the other controls the one. That is the ideal situation because through the organizations all over the state and through the *Northwestern Health Journal* we can present to the people of this state matters of public health interest in scientific medicine in a better manner than in any other way we can possibly develop. We should perpetuate this ideal situation.

DR. C. L. SCOFIELD (Benson): I want to correct a misapprehension that may occur in the minds of some of the members in regard to the attitude of the State Board of Health in the matter of the administration of the Sheppard-Towner Bill, the management and control of which was put in the State Board of Health. The State Board of Health at all times have attempted to throw all these matters into the hands of the regular profession of the state into organizing their local committees. Two members of that committee were appointed from the medical profession, and all our efforts have been along that line. Any work that was done in organizing that was first taken up with either the officers of this Association or with the proper committees of this Association, and the only reason that the coöperation hasn't been closer is because of the apathy and lack of interest of the medical profession in these things which have come up through the advance in medicine, and which, as a matter of fact, the people are demanding, and the medical profession have up to the present time been slow to accept and take hold.

Everything that we have done has been to work with and further the interests of regular medicine, and we can show where every move that has been made has been made in attempting to work with the profession, and I don't want any of Dr. Locken's state-

ments to convey the idea to the members here that the State Department of Health is not attempting to work with the medical profession and into their hands where we realize as well or better than anyone else that it must be done.

DR. GEORGE EARL (St. Paul): Depending of course upon what angle you have, it is easy to draw up a one, two, three and four procedure, but on this question of our relations to the public we are related to them, as has come out of this discussion of Dr. Scofield and Dr. Locken and other discussions, in four lines. First, as private physicians, and we have our committee, like Dr. Pearce's committee, that is trying to make us better as private physicians; then we are related to the public along tax supported lines and here the State Board of Health comes into action; and we are related to them along a line which is growing with tremendous rapidity, along the industrial and business lines and Dr. Savage's committee on contract practice. And if we just stop to think of the tremendous insurance organizations, we almost have to add a third relationship based on industrial and business relations. Then we have this fourth relationship that is based on lay organization, on lay interest, where the Minnesota Public Health Association enters.

It would be quite simple in this discussion that is under way just at this moment if these could be clearly and sharply differentiated. The State Board of Health is interested in tax supported expenditure only. It seems that in this committee being organized throughout the state, there are two doctors, who are asked to be on the committee from the county society, but also there is a request, is there not, for two officials of the county on the committee, and right there you have on this neither a tax supported body with whom we as doctors would clarify our thinking, nor a lay organization with which we could clarify our thinking, but something going on that is a mixture of the two. I must confess that is where the confusion, in my mind, comes from.

Is that the best way it can be done? Probably it is a necessity. Or should we come to the point that we should rather ask that a tax supported body relate itself to the expenditure of tax supported funds only and not interest itself in things that are not supported, and, of course, in the same way then, lay organizations like the Minnesota Public Health Association would continue to work as private or as lay organizations and just simply as citizens take an interest in the tax supported conditions.

I should like to ask Dr. Scofield, who is a member of the State Board of Health, if there isn't some confusion; if these units that are now being organized are a hybrid combination, tax supported on one hand and also seeking lay support and contributions on the other?

DR. C. L. SCOFIELD (Benson): I call attention to the fact that the passage of the Sheppard-Towner Bill, which we had nothing to do with, came largely from the women of the country, the women's clubs. We thought it was necessary to include them in the machinery of the administration. We take the stand that

in any county advisory committee, and that is all that it is, an advisory committee, if the two physicians members haven't influence enough to control the three lay members, there is something the matter with the physician members. We believe that if the physician steps up to his possibilities he will have perfect control and hold that organization which is purely advisory, as I say, in the lines that it should follow.

If they are failing in that proposition it is the fault of the physicians on that board, I say. Personally, I believe that some of the people who have been sent out by the division of child hygiene have been unwise in some of their work. It is a little difficult to send out nurses who don't get overly enthusiastic and overrun reasonable limits, but on the whole I don't know where the thing could be bettered. If we could better it I am sure the State Board would be very glad to modify the present plan.

PRESIDENT WRIGHT: There is no question about Dr. Scofield's interest in this organization because he was president of the Public Health Association before Dr. Taylor. He was one of the men who brought about the present organization of the Public Health Association.

However, we are not discussing this resolution. We are discussing the State Board of Health.

Unless someone has something further to say on this resolution, we have some By-laws which must be introduced before one o'clock. Dr. Herman Johnson has the floor. (Applause.)

I think it outside the point here to discuss the State Board of Health. The motion before the house is a resolution commending the work of the Public Health Association.

DR. H. M. JOHNSON (Dawson): Anything I say isn't to be offensive to anybody, but I feel strongly about it. I feel that it is up to the medical profession to stand by some health organization and work through some health organization, and if we have one that is good let us all join and stand by it.

I think the time is coming, Dr. Scofield and everybody else knows that, that times are going to change and I have got to change with them although I may be slow. I still believe the State Medical Association has absolutely got to work through some health organization and I think the Public Health Association is doing fine and has done wonderful work. I think we should all stand by it.

That matter which has come up about this letter— but before we lead up to that letter, there was a nurse who came through the country to see me. She wanted us to organize a public health unit. I told her I didn't see why we should because we had everything there. The State Association was taking that up and I said, "You take it up with Dr. Earl's committee and let them work it out in harmony and coöperation."

Dr. Chesley of the committee was invited to talk at the health meeting and he was there. The whole thing was gone over, and as I understood it all those things were to be worked out in coöperation and harmony with your committee. In spite of that these health units of organization are going on and they are

getting them organized, or trying at least, and while some of them may amount to something, some may not. I don't believe the doctors all understand it.

I might as well tell you frankly about this letter coming out. The State Board of Health is very anxious to have the Sheppard-Towner Act go through and have money appropriated in the state of Minnesota for it. I think there are certain places where it is necessary. I don't think the Association would object entirely to that, but at the same time I don't see why they don't come and talk this over. I believe these units are organized for the purpose of having political influence when the time comes that you want votes and money for the Sheppard-Towner Bill.

I am not criticising the doctors on that; that is on the state board. I think they are absolutely all right, but I may be all wrong, although I don't see any necessity for it. I don't think there is any fairer man in the state than Dr. Scofield and the other men on the board. I think we should remember it is not good to have too many health organizations. Work through one organization and get that going, but do not start anything like this, because you can get that through Dr. Earl's committee and the Public Relations Committee. They are committees of the State Association spending money for it, while in the past, as Dr. Scofield has said, the medical profession didn't work together with it.

I think that is what we are trying to do. We are spending money for it. All I would like to do is to see them hold their horses a little while.

DR. C. L. SCOFIELD (Benson): I want to call the attention of the House of Delegates to the fact that this County Advisory Committee is not a matter that has been sprung now. It has been five or six years since that matter was put before the House of Delegates and approved by it, and the House of Delegates authorized the president of the State Medical Association to recommend a member from each county medical society. At the present time I think they are trying to get the local committees to function.

I want to say to you that this committee you are objecting to now was a committee approved by the State Medical Association; approved at least five years ago at the Minneapolis meeting here. If you want it changed, say so, but you are going back on what you said several years ago and what was approved in the House of Delegates.

DR. H. M. JOHNSON (Dawson): At the House of Delegates some years ago you could put anything through which was probably all right, but at the same time Dr. Chesley has been told repeatedly that the feeling in the Association at the present time isn't just the same. I feel that because they did it several years ago doesn't exactly mean that they want it done today.

DR. C. L. SCOFIELD: Let the House of Delegates consider it then.

PRESIDENT WRIGHT: We have a resolution before the house and if there is no objection I am going to call for a vote on it.

The resolution was put to a vote and carried.

PRESIDENT WRIGHT: We have two or three amendments that we must put before this meeting before it is adjourned. Dr. Braasch, have you those amendments?

DR. W. F. BRAASCH: I think you have all received copies. We have reviewed this and would like to make the following recommendations:

Dr. Braasch read the changes.

## AMENDMENTS TO THE CONSTITUTION AND BY-LAWS

Recommended that Article IV, Section I, of the Constitution be altered so as to conform to the constitution of the American Medical Association, which includes (1) the elimination of the word "Emeritus" and substitution of the word "Affiliate"; (2) after the word "Honorary" add "Associate"; (3) substitute for "60" the figure "65."

By-Laws, Chapter I, Section III, insert after the word Emeritus, "or Affiliate"; after the word Honorary, "or Associate"; after the word Members, "and guests"; eliminate "and Visiting."

By-Laws. That Chapter IX, Section IV, will read as follows: "The Editing and Publishing Committee shall consist of five members appointed serially by the Council. Each shall hold office for a period of five years." This amendment to become operative January 1, 1929.

By-Laws. That chapter IX, Section I, be amended to read, "The President may at his discretion, with the approval of the Council, increase the number of members of any committee."

DR. W. F. BRAASCH: I move you the adoption of this resolution as amended.

DR. W. A. COVENTRY (Duluth): I second the motion.

PRESIDENT WRIGHT: As I understand it, these amendments must be laid over.

DR. W. A. COVENTRY: Amendments of By-laws have to be laid over until the next session. The Constitution lays over one year.

PRESIDENT WRIGHT: Do I understand it is legal to take that up this afternoon and vote on those amendments?

DR. W. A. COVENTRY: I think it would be legal if a motion was made to suspend By-law number twelve, which says, "It shall be laid." You can suspend a By-law on any majority vote of the house.

PRESIDENT WRIGHT: We ought to have a motion to suspend the By-laws and vote on the amendments at our afternoon session.

DR. W. A. COVENTRY: I think the thing to do now is to introduce the amendments to the By-laws and the changes, and when it comes up this afternoon make a motion to suspend the By-laws.

PRESIDENT WRIGHT: A motion to receive these amendments and bring them up at the next meeting is in order.

DR. L. SOGGE (Windom): I so move.

DR. W. A. COVENTRY: I second the motion.

PRESIDENT WRIGHT: It has been moved and seconded that these amendments having been read at this meeting be put over to our next meeting, which will take place this afternoon.

DR. F. J. SAVAGE: Dr. Braasch, is your committee eliminating that additional section providing for certain duties of the council in regard to that trust fund?

Dr. Braasch read Chapter 8, Section 13.

By-Laws. Chapter VIII, under the duties of the Council, add Section 13: The Council shall be empowered to invest and reinvest such moneys as may be available from time to time for the creation and building up of a reserve or sinking fund. A three-fourths vote of the Council shall be necessary to authorize expenditures from this fund other than for investment and reinvestment. It may at its discretion engage the services of a Trust Company to assist in the investment and reinvestment of this fund.

DR. W. F. BRAASCH: It seems to me we are running in too many amendments at one time. These ought to be considered separately.

PRESIDENT WRIGHT: We can't consider them now. They can only be presented for consideration this afternoon.

DR. W. F. BRAASCH: I move these motions be introduced for consideration at the next meeting.

DR. W. A. COVENTRY: I second the motion.

The motion was put to vote and carried.

PRESIDENT WRIGHT: This will be brought up for action at the afternoon session, and if anyone wishes to get in touch with Dr. Braasch and study these various amendments, I would recommend that he do so. We should like to have every one understand them and have a thorough discussion on them this afternoon before their adoption.

DR. W. F. BRAASCH: May I add in the interim of the two meetings that the Reference Committee would welcome any suggestions for changes or criticisms made of the committee reports or of these resolutions.

PRESIDENT WRIGHT: Dr. Braasch, Dr. Coventry and Dr. Johnson are on that committee.

DR. H. M. WORKMAN: I want to call to the attention of the members of the Council that there will be a meeting of the Council immediately after the adjournment of the House of Delegates.

PRESIDENT WRIGHT: I will now ask Dr. Sweetser to read his report. He is the Chairman of the Committee on State Health Relations. This is a new committee recommended by the Council.

Their object is to study and familiarize themselves with all of the activities, municipal, state and federal, in the state of Minnesota and be able at any time to give us information or suggestions as to how we should act in regard to these various agencies.

DR. THEODORE SWEETSER (Minneapolis): This committee has just been appointed and it consists of fourteen members from the various parts of the state. We were unable to get the members together until last evening, when we discussed the field of work of this committee in general and very widely.

Dr. Sweetser read his report.

## REPORT OF THE COMMITTEE ON STATE HEALTH RELATIONS

Mr. Chairman and Members of the House of Delegates:

This Committee was only very recently appointed. It consists of 14 men from various parts of the State. It met June 10, 1928, to organize and discuss its field of work.

The Committee feels that it must proceed slowly and carefully until it can make a survey of the field of tax-supported Health Activities. The members have undertaken such a study.

A motion was presented and passed recommending to the House of Delegates that all agencies doing Public Health work in Minnesota should be placed under the control of the State Board of Health and that a law be drafted to make that effective.

One resolution (attached herewith) sent to the State Medical Association by the West Central Minnesota Medical Society has been referred to our Committee. The Committee has not had time to complete its consideration of the resolution, and will report later to the Council on the general matter of payment of local doctors for Public Health work.

One matter coming within the scope of this Committee's work must be intensively studied within the next few months: The future attitude of the State Medical Association toward the so-called Sheppard-Towner Act is being considered by the Committee, and its views will be reported to the Council in the autumn.

THEODORE H. SWEETSER, Chairman.

### RESOLUTION\*

WHEREAS, the State Board of Health of the State of Minnesota in coöperation with Public Health Nurses has been sponsoring throughout the State a program of immunization treatment for various diseases, and in many instances has called upon and asked local physicians to give the necessary treatment free of charge, and

WHEREAS, a number of local physicians have responded to such request and have given treatment without charge, but the aforesaid State Board of Health and Public Health Nurses have assumed the credit for the program and have failed to recognize, appreciate, and make public the coöperation and assistance of local physicians in such program,

BE IT RESOLVED, that it is the sense of the West Central Minnesota Medical Society that local physicians of the State of Minnesota should in the future refuse to coöperate with organizations sponsoring such program as aforesaid entirely without charge, but that our local physicians who are called upon to give treatment of the nature herein referred to should in each instance render such treatment for minimum charge, same to be at least \$1.50 for each case immunized.

DR. THEODORE SWEETSER: I think there is a lot of information in this book by Moore and the sources of the information in the book are given in practically all instances so that we can check it up in a critical way.

\*Resolution referred to in report of Committee on State Health Relations.

I may have the wrong attitude and I know it is going to take me a long time to digest what I have read in that book, but I think a lot of people could take it up critically and study it and get a good deal of real information out of it.

As regards the report of this committee, the committee says frankly that it is going to proceed very slowly and carefully and not make any recommendations. The only recommendation that the committee made may very well hold over and be discussed before any action is taken. So I would move that this be referred to the Reference Committee for further consideration. I move that this report, as is customary, be referred to the Reference Committee.

DR. C. P. ROBBINS (Winona): I second the motion.

SECRETARY MEYERDING: We have this book outside in the anteroom. We have some in stock. We have a copy for review for the *Northwestern Health Journal* and found it intensely interesting. There is a lot of data in it, and through it all there is a subtle suggestion, which also gives you the point of view of a group which I spoke of in my report, who are controlling certain great movements along preventive medicine lines and who do not believe that the practice of medicine has anything to do with public health.

We brought it along with the idea that some of you might get it and read it and feel as we did. It gives a very complete résumé of what the attitude of the people is.

We had a meeting in March at which the leaders of all the great lay organizations were present and this book was presented. This man Moore, of the United States Public Health and Economics, is not a doctor, but he is hired by these great organizations to make surveys. That gives us a very beautiful, clear and definite idea of what they are driving at and trying to do. Every doctor knows what the practice of medicine is and that preventive medicine belongs to the practice of medicine. In that way I want to apologize for having the book out. It isn't intended to sell, because I know you wouldn't be interested.

The meeting adjourned at one o'clock.

### MONDAY AFTERNOON SESSION

June 11, 1928

The meeting convened at two-thirty o'clock, President Wright presiding.

PRESIDENT WRIGHT: The meeting will please come to order.

We have the pleasure in this afternoon's session of meeting the next President of the American Medical Association, and it certainly gives me great pleasure to see Dr. Thayer here, because he was the first man who attempted to teach me a soft systolic murmur.

It gives me great pleasure to introduce Dr. W. S. Thayer of Baltimore.

The audience arose and applauded.

DR. W. S. THAYER (Baltimore): I never knew, until a good while after, that these boys used to call me the soft systolic murmur. (Laughter.)

For a good many reasons it is a great pleasure to be

here and to meet you. One of them is that I remember so delightfully the meeting in 1913. I remember it by one instance. One of your speakers told an awfully good story about the Scandinavian Congressman from this state who introduced a resolution in Congress that the United States exchange the Philippines for Ireland in order that we might raise our own policemen. (Laughter.)

I never forgot that and I hope some of you haven't heard it.

Another reason, and a really important reason, is that this is of course one of the great medical centers of the community, because Minneapolis and the University of Minnesota means not only the University of Minnesota to you, but means in addition the great Mayo foundation, and between the two it makes this one of the great medical centers, not only of the country but of the world.

Not very long ago I wrote to a Boston man telling him about one of my relatives, a youngster whom I thought of sending somewhere for a year or two. I told him the exact situation, the age of the boy, and so forth. Mind you this was a Boston man, lived and breathed from time immemorial in Boston, and he said, "Send him to the Mayo Clinic for several years. I think there is no place where he would learn quite so much."

I remember how impressed I was, thirteen or fifteen years ago, at the Mayo foundation, and I fancied that the result of it all is that you are going to have so many at the meeting that you won't know what to do.

I must not take your time. I only want to say it is a great pleasure to meet you and a very great pleasure to be here. (Applause.)

PRESIDENT WRIGHT: Now we are back to business and the next report we have to deal with is the report of the Necrologist. Is Dr. Hansen here?

Dr. Olga S. Hansen read the report of the Necrologist.

## REPORT OF THE NECROLOGIST

To the Members of the Minnesota Medical Association:

Since the necrologic report was given at the last meeting of this society, the state has suffered the loss of forty-one physicians, sixteen of whom were members of the Minnesota Medical Association. The following were members of our organization:

Alfred B. Hart, Owatonna. Born, 1868. University of Minnesota, 1903. Died, May 10, 1927. Age, 59.

George Herman Simon, St. Paul. Born, 1883. Northwestern University, 1909. Died, August 6, 1927. Age, 44.

Peder A. Hoff, St. Paul. Born, 1874. University of Minnesota, 1900. Died, September 5, 1927. Age, 53.

Nellie S. Shulean, Cambridge. Born, 1864. Minneapolis College of Physicians and Surgeons, 1893. Died October 22, 1927. Age, 63.

Reuben D. Zimbeck, Maynard. Born, 1857. Rush Medical College, 1885. Died, November 2, 1927. Age, 70.

Edward M. Clay, Hutchinson. Born, 1866. Minne-

apolis College of Physicians and Surgeons, 1893. Died, November 4, 1927. Age, 61.

Anton Shimonek, St. Paul. Born, 1855. Rush Medical College, 1879. Died, November 23, 1927. Age, 72.

Emery Herbert Bayley, Lake City. Born, 1865. Rush Medical College, 1893. Died, December 18, 1927. Age, 62.

George G. Eitel, Minneapolis. Born, 1858. Minnesota Hospital College, 1885. Died, February 9, 1928. Age, 70.

Edward Oscar Vollum, Albert Lea. Born, 1880. University of Iowa, 1908. Died, February 28, 1928. Age, 48.

Wilfrid Lyons Gauthier, Virginia. Born, 1870. University of Montreal, 1892. Died, February 28, 1928. Age, 58.

Charles Wesley Bishop, Minneapolis. Born, 1874. McGill University, 1895. Died, April 19, 1928. Age, 64.

Louis Dunn, Minneapolis. Born, 1866. Medical College of Ohio, 1887. Died, April 20, 1928. Age, 62.

Gerald Ryan Moloney, Belle Plaine. Born, 1848. New York University, 1875. Died, July 8, 1927. Age, 79.

James Buchanan Lewis, South St. Paul. Born, 1855. University of Pennsylvania, 1878. Died, July 24, 1927. Age, 72.

Eduard Boeckmann, St. Paul. Born, 1849. University of Christiania, 1874. Died, August 8, 1927. Age, 78.

Arthur L. Travis, Minneapolis. Born, 1861. Rush Medical College, 1887. Died, August 16, 1927. Age, 66.

Abraham Franklin Strickler, Sleepy Eye. Born, 1873. University of Michigan, 1898. Died, September 12, 1927. Age, 54.

George A. Custer Cutts, Litchfield. Born, 1876. University of Minnesota, 1900. Died, September 17, 1927. Age, 51.

The following was an honorary member of the State Association:

John Grosvenor Cross, Minneapolis. Born, 1870. Northwestern University, 1895. Died, March 5, 1928. Age, 58.

The following were not members of the state society at the time death occurred:

John W. Scott, St. Charles. Born, 1850. Univ. of Wooster, 1880. Died, May 16, 1927. Age, 76.

Herman Gustavus Franzen, Minneapolis. Born, 1873. Northwestern University, 1905. Died, January 16, 1928. Age, 55.

Mary E. Towers, Minneapolis. Born, 1857. University of Minnesota, 1899. Died, June 10, 1927. Age, 70.

Henry Winfield Brazie, Minneapolis. Born, 1843. Cleveland Homeopathic College, 1870. Died, July 2, 1927. Age, 84.

George Bartholomew Whare, Two Harbors. Born, 1877. Rush Medical College, 1903. Died, June 4, 1927. Age, 50.

Jonas M. Kistler, Minneapolis. Born, 1856. Jefferson Medical College, 1883. Died, August 13, 1927. Age, 71.

Thomas Glenn Newell, Adrian. Born, 1858. Univer-

sity Medical College of Kansas City, 1896. Died, August 27, 1927. Age, 69.

John J. Platt, St. Paul. Born, 1875. University of Minnesota, 1895. Died, September 12, 1927. Age, 52.

John Alexander McCuen, Duluth. Born, 1864. University of Toronto, 1891. Died, November 5, 1927. Age, 63.

Clarence F. Sweney, St. Paul. Born, 1857. Rush Medical College, 1881. Died, November 27, 1927. Age, 70.

George F. La Paul, Excelsior. Born, 1861. Minnesota College Hospital, 1885. Died, November 17, 1927. Age, 66.

Charles Eastwick Smith, St. Paul. Born, 1843. University of Pennsylvania, 1865. Died, January 10, 1928. Age, 85.

Alexander Campbell, St. Vincent. Born, 1840. Eclectic Medical College of Cincinnati, 1881. Died, January 17, 1928. Age, 88.

Peter C. Davison, Willmar. Born, 1872. Hamline University, 1904. Died, March 3, 1928. Age, 55.

Ora Carlton Strickler, New Ulm. Born, 1863. University of Michigan, 1885. Died, March 12, 1928. Age, 65.

William M. Newhall, Crystal Bay. Born, 1857. Rush Medical College, 1883. Died, April 10, 1928. Age, 71.

Our deceased colleagues have given long years to their profession, only two having died under the half-century mark. Most of them have been active in important civic and educational movements. There have been health officers, coroners, members of examining boards, officers of medical societies, founders of hospitals and medical libraries among them. A former city and county physician of St. Paul, who served before there was a city hospital and when the city consisted of but one graded street (Charles Eastwick Smith), one of the first surgeons in the Northwest to operate for appendicitis, several Civil War veterans, and many physicians who have ministered faithfully, if not spectacularly, to the communities that depended on them are on the roll of those who have been called by death during the past year.

Each life has been a tributary stream which has flowed on richly and freely, increasing by its gifts the importance and magnitude of the broad river of humanity.

PRESIDENT WRIGHT: I am very much surprised at the number of deaths.

DR. H. B. GRIMES (Madelia): Dr. O. C. Strickler of New Ulm has always been a member of this society. After a year or two his health failed and he moved to California.

DR. W. A. COVENTRY (Duluth): I move the adoption of the reports.

The motion was seconded.

The motion was put to a vote and carried.

PRESIDENT WRIGHT: The next report is that of the Radio Committee. Is Dr. Maxciner here? Is Dr. Lewis here?

Dr. Lewis, you are a member of the Radio Committee aren't you?

DR. C. B. LEWIS (St. Cloud): I have never met with them.

PRESIDENT WRIGHT: Will you read this report for us?

Dr. Lewis read the report of the Radio Committee.

#### REPORT OF RADIO COMMITTEE

Repeated meetings were held by the President of your society, and the Chairman of your committee, with Mr. H. A. Bellows, and Mr. L. J. Seymour, of WCCO, in an attempt to arrange for broadcasting over their lines. It was finally agreed that WCCO would furnish 15 minutes, Wednesday morning, at 10 o'clock, for broadcasting of a Public Health program.

Much discussion pro and con arose as to the selection of a speaker with the ultimate choice of Dr. W. A. O'Brien of the University of Minnesota. Dr. O'Brien was especially selected because of his ability and the fact that he is not, in any way, engaged in the private practice of medicine. These talks have been given by Dr. O'Brien each Wednesday since April 4, 1928.

We have received repeated letters and numerous questions which indicate that the talks have aroused the public interest and every one may conclude from similar programs that the only way to gauge the success of our efforts is by the number of letters and comments which are sent to the station. All of these letters are acknowledged but no attempt is made to answer questions directly through the mail. The questions and suggested topics serve as a basis for subsequent talks.

We believe that there is an excellent field for the broadcasting of Public Health information, and that during epidemics and in matters of Public Health measures, etc., information of great value can be furnished the general radio audience.

During the week of the American Medical Association four talks will be given, two over WCCO and two over KSTP. Three of these talks will be given by men of National reputation and the fourth is to be the annual address of the President of the American Medical Association.

Dr. O'Brien has suggested that: (1) The State Medical Association arrange through its county societies for publicity and that the State Association notify its various component societies what topics will be discussed for a month in advance and (2) that doctors and societies who wish various topics discussed will communicate these suggestions to Dr. O'Brien.

Although we have had up-hill work in trying to put over these talks I believe that we have been sufficiently successful to warrant their continuance and would so recommend. I wish to acknowledge the sincere cooperation and helpful suggestions given by the management of WCCO, and during the past week by the management of KSTP. All of the broadcasting has been done by these companies at their own expense. I wish to thank the members of the committee for their coöperation. I further would recommend acknowledg-

ment of the services of Dr. W. A. O'Brien and favorable commendation for the excellence of his work.

STANLEY R. MAXEINER, Chairman, Minneapolis.  
E. H. NORRIS, St. Paul,  
A. W. ADSON, Rochester,  
J. S. REYNOLDS, St. Paul,  
L. A. BARNEY, Duluth,  
C. B. LEWIS, St. Cloud,  
T. H. DICKSON, St. Paul,  
S. R. MAXEINER, Minneapolis.

PRESIDENT WRIGHT: Have you reviewed this report, Dr. Braasch?

DR. W. F. BRAASCH: The Reference Committee has not had an opportunity to review the report. I move its adoption and that it be referred to the Reference Committee and be adopted in its present form or any other alterations that the Reference Committee may see fit to make.

The motion was seconded.

PRESIDENT WRIGHT: I have sat in at these meetings and I want to compliment Dr. Maxeiner on what he is doing. Dr. O'Brien's program is attracting the attention of other Radio Companies.

The motion was put to a vote and carried.

PRESIDENT WRIGHT: Next is the report of the Committee on Public Policy and Legislation, by Dr. Herman Johnson.

Dr. Johnson read the report of the Public Policy and Legislation Committee.

#### REPORT OF THE LEGISLATIVE COMMITTEE

This Committee has very little to report. There are some resolutions passed by local societies requesting certain laws be passed. These have been referred to the council and they will undoubtedly report on them.

The Legislative Committee met in January, and went over these resolutions carefully, and believe it would be a good thing if they could be passed, especially the one from Ramsey County, but believe it should be brought about and sponsored by the taxpayers' league instead of the medical societies, as it would be very hard, if not impossible, for the profession to get such a bill passed.

There are rumors that attempts will be made at the next session to get the law changing the statute of limitations for malpractice suits changed back from two years to six, the same as happened in North Dakota.

There is also a rumor that Chiropractors will attempt to be exempted from the Basic Science Bill.

The Naturopaths will evidently introduce a new bill, also the Masseurs will likely attempt to amend their bill, so as to give them more privileges.

The committee recommends that no new laws be attempted, but that we guard carefully what we have, and that all attempts by the cults to give them more privileges be carefully watched.

(Signed) H. M. JOHNSON.

DR. HERMAN JOHNSON (Dawson): The legislature on the Basic Science Law felt we should not ask for

much legislation next year, except to amend our Basic Science Bill. They said, "Something like that that is necessary is all right, and two years from that time if there is something we have to have it will be all right."

Of course if we have to have something, we have to have it. We promised that we wouldn't push anything very hard. Of course that is something we don't just promise. We told them we felt like they did, that we wouldn't try to enforce too much legislation.

DR. W. F. BRAASCH: The Reference Committee has reviewed the report, wish to commend it, and we move its adoption.

DR. F. C. SCHULDT (St. Paul): I second the motion.

The motion was put to a vote and carried.

PRESIDENT WRIGHT: The report of the Committee on Public Health Education, by Dr. Earl.

#### REPORT OF THE COMMITTEE ON PUBLIC HEALTH EDUCATION

The purpose of the Committee is to stimulate our membership first to Thought, then to Knowledge, and finally to Action, thus regarding the relations existing between themselves as individuals on the one hand, and the patients and the public on the other, because whether a man is practicing alone, or in partnership, or in a large group, the sum total in the last analysis depends on what rôle the individual doctor plays in this relationship.

The Committee during 1927 attended no public health meetings; established no newspaper contacts; affiliated itself with no lay organizations, and did nothing in detail along the line of public health contacts so far as the public was concerned. The Committee had, however, definite objectives.

#### SURVEY OF INDIVIDUAL OPINIONS

The Committee has undertaken a survey embracing the interviewing, as far as possible, in small groups the 2,000 members of the Minnesota State Medical Association to find out their viewpoint on the questions involved, and to secure a better coöperation between the members, and to strengthen the organization of the State Association. During 1927, nineteen meetings were held, more than two hundred doctors being interviewed by this method. These meetings gave opportunity to get a cross section of the viewpoint of the doctors on the question of the relations between the practicing profession and the public. It was proved that there was a wide variance of individual opinion and that these meetings were always helpful in arriving at a greater unity of thought. Expressions were sought on such subjects as state medicine, preventive medicine, lay organizations, newspapers and other types of publicity. The work of the Legislative Committee, the Committee on Contract Practice and the Radio Committee was always mentioned, as these committees particularly related to the plan. Emphasis was placed on the individual doctor's importance in any plan of Public Health Education. It was the aim of the Committee, during 1927, to have these groups consist of from twelve to fifteen members. When those attending the meetings had become thoroughly familiar with the

idea of the Committee, they, in turn, were urged to hold meetings of groups of twelve or fifteen. In this way every member of the Association has a share in directing the program.

TWO PUBLICITY MEETINGS; ATTENDANCE LIMITED TO  
DOCTORS, BUT LAY SPEAKERS INVITED

Two large Publicity Meetings were held: One in co-operation with the Legislative Committee at the Saint Francis Hotel, Saint Paul, Minnesota, March 17, 1927; the other at the Nicollet Hotel, Minneapolis, Minnesota, December 10, 1927. About sixty-five members were present at each meeting. The purpose of inviting in a few chosen lay people such as editors, publicists, and representatives of other professions engaged in similar programs was to secure the attitude of the public on the question of health relations. It is evident that the viewpoint of any given profession is not necessarily that of the public because the profession has so much information on the subject and has also developed certain definite traditions regarding it. It is necessary then to begin to study and understand the attitude of those with whom we must deal.

THE PRIMER

As a result of the 1927 work the Primer was published. The Primer in itself has no great intrinsic value, but it is a means of persuading the men of the State Association to think on the question of their relations as practitioners of medicine to the public, inducing them to make a serious, scientific study of this relation with the hope that some definite progress will be made. It was interesting to note that ten per cent of the doctors of the State responded with help and criticism in the formation of the Primer. We could have employed some publicist to produce the Primer, but the Committee felt that it was better to have it represent the attitude and efforts of the physicians themselves. It acted as a clearing house of the doctors' opinions and at the same time urged them to a study of the situation.

COÖPERATION WITH THE LOCAL AND COUNTY SOCIETY AND  
INDIVIDUAL EFFORT

Increasingly it is becoming evident that the State Committee's functions and powers should be limited to act as a bureau through which the opinions of the individual, of the local group and of the county society can be interpreted for the benefit of other similar individuals, groups and societies, and that it should deal largely with the broader principles involved and leave as much as possible to the county society, to the local group, and to the individual doctor. Where the task is a definite one, specific committees should be appointed, as has already been done. Some questions have arisen on such problems as Legislature and now more recently on the Radio and Contract Practice. It has been suggested that a State Committee be appointed on state medicine, and probably from time to time on other specific problems, any one of which in itself would take a sufficient amount of time that would be fair to expect from a volunteer committee of doctors.

Regarding some problems it is very evident that the State Committee can act only in an advisory capacity.

For instance on the question of free clinics, both in the form of traveling clinics in the various localities, and free clinics in the sense of dispensaries, charitable medical service in the larger cities, public health nurses, and lay organizations, we find a wide variance of individual and local opinion. The physicians in some localities welcome the free clinics and in other localities they oppose them. This wide variance of opinion is just the reason for caution and is why the State Committee has proceeded so slowly and insists first on securing all the various viewpoints. Probably on questions such as those mentioned, in the last analysis it will be the local situation and opinion that will determine the question in any given instance. The County Society will in most cases be the best medium for discussion of these problems and in those cases where the geographical area is so large that a variance of opinion exists in various localities, it may be a matter for the physicians locally to get together and determine upon procedure. This does not mean that the State Committee is not anxious to help and coöperate in every way in the wide specific problems, but its present attitude is to suggest the formation of a central committee for that problem that will be able to give it a broader study and probably lay down some general principles and suggestions for the wisest course.

CONCLUSIONS

The question of the relations of the practicing profession to the public will remain in the hands of the individual doctor, and will depend on his attitude and approach to the question, for the individual doctor is the key to the question of public health education. His knowledge of health, preventive medicine, and diseases marks him as a leader in the minds of his patients and the community; and the relations existing between the physicians and the public will be an average of the relations existing between the individual doctor and the public. We are conscious that the matter of health which has been entrusted to our hands, as two thousand practitioners, is a terrific responsibility and that progress will only continue to be made in so far as the public attitude is one of reasonable appreciation and economic support to those who are giving their full time as practitioners to this question.

We wish to close with again calling your attention to the fact that the Committee is coming to every one of you in so far as you will coöperate, to secure your opinion on the question of the relations between you as a doctor on the one hand and the public on the other, to find what you think should be the relations between the local groups and the public, the relations between the county society and the public, and the relations between the State Association and the public.

ADDENDA

(Giving specific activities from the first of the year to June first)

The Committee has sent Hygeia and the Northwest Health Journal to one hundred fifty members of the Minnesota Legislature. All of these signified their appreciation by securing these informative journals. We

did not send these papers to any legislator who did not express his desire to receive them.

A Newspaper Service has been established and already one hundred eighty newspapers are publishing weekly articles in all of which the Minnesota State Medical Association is mentioned.

A page has been assigned in MINNESOTA MEDICINE. In every issue there will be information on the questions and policies of the Committee.

The Committee has arranged to meet regularly each month. These meetings are held alternately in Minneapolis and Saint Paul, and more definite progress along publicity lines will be made.

Members of the Committee have appeared before the Women's Auxiliary. The Auxiliary is coöperating in every possible way.

The small group meetings have been continued, the later ones taking the form of meetings with hospital staffs. While the work of the Public Health Education Committee has become more widely known, it is still a fact that the policies which it presents are still unknown to a large part of the two thousand members and it is the aim of the Committee to continue the small group discussion meetings with its basic informative principles until all of the members have been reached. Up to the present time the Committee has succeeded in reaching over five hundred members of the Association in small group meetings.

A speakers' bureau has been tentatively organized. Up to the present time it has been felt that the county societies could function better upon this than the state society. Definite progress has been made by some of the county societies.

The State Committee has begun a speakers' lay library; its aim is to furnish material to the members on subjects appropriate for lay talks.

The Committee coöperated with a large life insurance company in criticising a tentative draft of a pamphlet to be issued by the company, entitled, "Your Friend—The Doctor."

At the suggestion of the Committee, the President has appointed a new Committee to deal with the problems of state medicine, as this was felt to be a distinct task and sufficiently large to take up the time and energy of a specific committee. The Committee has sought to coöperate with the other committees that have definite and specific tasks that are interwoven and correlated with public relations by having the chairmen of the various committees take part in our semi-annual conference.

The Committee has under consideration a plan whereby "the various agencies throughout the state whose function is the promotion of public health, and whose governing bodies are composed in whole or in part of laymen," will have representatives from the State Association upon its governing boards.

DR. GEORGE EARL (St. Paul): So much of the morning session was given up to phases of public health education, Mr. Jones' wonderful talk and then discussion by Dr. Scofield and others on the question of

the State Board of Health, so I am not going to read a report. The Reference Committee has it.

Among the specific things that your committee has undertaken since the first of the year through the help of Dr. Meyerding's office, has been to secure publication in the country newspapers of articles in which the Minnesota State Medical Society is mentioned, and in which the family physician is kept before the public. Then we have sent *Hygeia* and the *Northwestern Health Journal* to the legislators. In doing this we wrote and asked them if they desired to have those papers come to their homes and sent it only to those who requested and were glad to have the paper. I think three-fourths of the legislators accepted our offer. We have their return post cards that they would be glad to have these excellent journals come to their homes.

Then a library for the doctor's use in addressing lay organizations is being compiled at Dr. Meyerding's office. In this we are patterning after Illinois, who have been very active in speaking before lay organizations and who have assembled a very satisfactory library, so that any of the doctors called upon to address a Rotary or Kiwanis Club, or speak before any organization in an ethical way, have at their call material and aids so that the burden of preparing the speech doesn't fall entirely on each man of the Association, on each occasion and for each subject.

We have a tentative list of speakers for a lay bureau, but so far we have not functioned on this quite so directly, because I think the county society here and the St. Louis County Society have been handling that. In Hennepin County we understand they have asked one of the professors of the University to come over and coach those of the doctors of Hennepin County who have volunteered to such lay service. So they are getting under way and coming directly with the organizations here in Hennepin County. We know in Olmsted County they have been at this for a long time and are giving a series of lectures there, etc., and becoming very well known. (There in one of the hotel lobbies once a week.)

Of course, in these centers the State Committee will not have to function, so we will probably be called on more in those places where they are not quite so thoroughly organized as in these larger medical centers.

I wish you might see these newspaper articles, but we don't have any copies with us. Mr. Crownhart was at one of our regional meetings and had a long list of clippings and we were all taken aback in surprise by the number of newspapers that were represented on one subject, and while we have only been at it a short time we are coming dangerously close to the Wisconsin record, and I think, if they will give us another year, we will be able to equal them in the number of papers that are glad and willing to accept our articles.

In the Public Health Education work, it was brought out in the discussion this morning that the differences of opinion are so great that we have been very pleased and are anxious to have the new committee that you heard from this morning undertake a phase of the work

of Public Health Education, even though it isn't strictly considered such.

The committee Dr. Sweetser reported on this morning, the committee on State Health Relations, we understand will deal particularly with tax supported conditions, such as anything that the state votes tax support to, the city and county. In itself the question of state medicine was such a large one we felt it could well have a separate committee.

There is one phase that we know has not been given the study it deserves by the State Association, and that is the question of lay organizations. Here again in Hennepin County they are coöperating with their lay organizations by way of having assigned in so far as the lay organizations are willing to confer with the Board of Directors of each organization to medical men, and we understand that other counties are doing the same thing. Probably throughout the state there is a work to be done with those organizations that have a statewide organization, and your committee intends, unless there is some other direction from the president and council, to take this up during the next six months of its tenure and make a study of this one phase that up until now has not been covered by any committee.

You see on all this question of public health you have your committee on contract practice, and public relations. That is, a relation to the public. We now have our committee, we wouldn't call it state medicine but that is practically a synonymous term for it. We have many committees that are dealing with specific phases of the Public Relations Committee, so up until now we have acted as a sort of entering wedge.

I was impressed this morning when Dr. Pearce said the places they have failed to secure an entrance for their committee have been those places in which he himself and the members of the committee have not personally gone to interest the people. Dr. Wright, your President this year, and the presidents of the last succeeding years are coming more and more to this question of personal salesmanship. Dr. Wright is aiming to go to every county and district society. We are realizing more and more in any propaganda the need of personal contact and of personal salesmanship.

Up until now your committee on Public Health Education has emphasized what personal contact will do. We have reached 500 out of the 2,000 members in small group meetings, most of them averaging twelve or fifteen, some of them slightly larger and some of them smaller. We feel that that phase of the work should be kept up, but of course now that the ground has been laid everybody seems quite in unity on certain things. There is no doubt that the committee should enter a more specific and more definite task of Public Health Education. (Applause.)

Dr. W. F. BRAASCH: This report has been commended and we move its adoption.

It would also seem fitting at this time that we have reviewed the committee report of Dr. Sweetser on the State Health Relations, that we would certainly commend the report. Considering the length of time they have had to review and report the subject they consider, however, instead of adopting it this year that we

refer it back to the committee for continuance of their study and recommendations for next year.

Dr. H. M. WORKMAN: I second the motion.

PRESIDENT WRIGHT: We had this covered pretty thoroughly this morning and I think you all realize what a tremendous amount of work this committee is doing. Dr. Earl's report was only a very brief expression of what that committee has done in the way of meetings and all of the things they have done in the last six months. They are doing a splendid piece of work.

If there is no discussion I will call for a vote.

The motion was put to a vote and carried.

PRESIDENT WRIGHT: Next is the report of the Committee on Contract Practice, Dr. Savage.

Dr. F. J. Savage read the report of the Contract Practice Committee.

### REPORT OF COMMITTEE ON CONTRACT PRACTICE

Meeting held at Athletic Club, Saint Paul, February 18, 1928. All but one member present.

Consideration was given to the following subjects:

1. Government care of employees.
2. Mines.
3. Life Insurance.
4. Fraternal Organizations.
5. Liability Insurance Work and Public Liability Insurance Work.
6. The American Service Corporation.
7. Actions on resolutions referred to the Committee at the Duluth Meeting.
8. Recommendations to the State Association.

#### GOVERNMENT CARE OF EMPLOYEES

We find in general that the form of government care of employees is quite analogous to our state compensation law. That the Government cares for employees in accident cases incidental to their work and that the fees paid attending physicians are fair average fees. Such service may only be rendered by physicians who are on the Government list of approved physicians in the community. The maintenance of a physician on full time duty in some of the larger cities is primarily to protect the government from employees' being absent from duty on account of alleged illness. Post office employees are allowed slightly over two weeks' sick leave per year and their physical disability must be certified by the government physician.

#### MINES

The present system is an outgrowth of economic necessity dating back to the pioneer days of northern Minnesota.

With the increase in the use of power machinery and the consequent decrease in the number of employees the present income of mining contract surgeons from this source appears to be much less than that of twenty-five years ago.

#### LIFE INSURANCE

\$18,000,000 in life insurance examination fees was paid by the companies to the medical men of the United States in 1926.

As an offset to this figure the rather startling fact was brought out that at the present time 60 per cent of all life insurance companies in the United States write some of their insurance without physical examinations.

Your committee recommends that the members make no regular life insurance examination for less than a fee of \$5.00.

#### FRATERNAL ORGANIZATIONS

In those communities where contract practice through Lodges is more or less prevalent we wish to refer with our approval to the way in which the Washington County Medical Society at Stillwater met the situation.

Twenty-five per cent of the families in Stillwater belonged to the Eagles. The Eagle physician received \$2.00 per family per year. The estimated revenue per patient was between seven and eight cents per call.

The County Society gave the physician his choice of expulsion from the society or dropping the Lodge practice. He chose to retain his medical affiliations.

#### LIABILITY INSURANCE AND PUBLIC LIABILITY

This is a greatly involved subject and demands careful study over a considerable period of time. The Insurance Companies are spending money for the study of a constructive effort to better the relations between them and physicians and to improve the service rendered injured men.

Your committee recommends that a permanent committee on Contract Practice of nine be created, to be appointed by the president as follows: three for one year, three for two years, and three for three years.

The function of this committee shall be: (1) To continue the study of contract practice in Minnesota; (2) to assist Insurance Companies, when requested, in selection of men properly qualified for industrial surgical work; (3) to establish a reasonable fee schedule for industrial work with the coöperation of Insurance Companies writing industrial insurance; (4) to act as arbiters between physicians and Insurance Companies in matters of dispute with reference to fees, when requested to do so by either party.

#### THE AMERICAN SERVICE CORPORATION

This concern proposed to sell to the public at large, in consideration of an initiation fee of \$10.00 plus an annual fee of \$25.00, medical and surgical services, ambulance, hospital and x-ray service, legal advice, dental service, limited nursing service consisting of one day's nursing by a practical nurse, cut rates on purchase of merchandise, etc., etc. The Ramsey County Medical Society acted unanimously as follows:

#### CONCLUSIONS

1. That this proposed scheme fulfills no function not already available in the treatment of disease.
2. That this form of contract practice tends toward poor and indifferent work on the part of physicians with the effect on the public of decreasing their regard for the profession of medicine.
3. That the whole idea is a money making affair for laymen in which the physician's part is to render cut rate services whereby the laymen may profit financially.

#### RECOMMENDATIONS

1. That Ramsey County Medical Society condemns the plan as subversive of the best interests of both the public and the medical profession.

2. That any member of the Ramsey County Medical Society who may engage in work for the American Service Corporation shall be summarily expelled from membership in the Ramsey County Medical Society.

3. That the above conclusions and recommendations be printed and sent to each member of the Ramsey County Medical Society.

This matter raises the question of Lodge practice and beneficial associations in general which your committee feel should be fully discussed by the House of Delegates.

#### ACTIONS ON RESOLUTIONS REFERRED TO THIS COMMITTEE BY THE HOUSE OF DELEGATES AT DULUTH MEETING

1. To secure the passage of a bill making it impossible for a personal injury case which does not come under the Workman's Compensation Act to be legally settled in or out of court without the bills for medical and surgical services and hospitalization being settled at the same time to the satisfaction of all parties concerned.

Your committee approves the principles involved but feels that it should be given further consideration and that it is not advisable to push such legislation at this time.

2. Legislation to amend the present Workman's Compensation Act: 1st, to allow the injured workman to select his own physician; 2nd, to eliminate cut rate industrial insurance fees.

Your committee recommends that no action be taken on the first clause of this resolution.

Action on the second clause is incorporated in the recommendations of this committee for the formation of a permanent committee on Contract Practice.

#### RECOMMENDATIONS TO THE HOUSE OF DELEGATES

1. That no regular life insurance examinations be made for a fee of less than \$5.00.

2. That a permanent committee of nine on Contract Practice be established which shall function as outlined.

3. That the Minnesota State Medical Association ask the Minnesota Bar Association to investigate the matter of so-called "ambulance chasing" in Minnesota.

4. That all resolutions by the House of Delegates calling for the enactment of new state laws shall be referred for final action to the Council of the State Association.

5. That an expression of opinion by the House of Delegates on the operation of the medical phases of Fraternal organization and Beneficial Associations is desirable.

DR. W. F. BRAASCH: The Reference Committee has reviewed this excellent report on this subject and we recommend, together with recommendations made by the Chairman, with one exception and that is the first recommendation which reads as follows: "That no

regular old time life insurance examinations be made for a fee of less than \$5."

In discussing this item, this clause, in conjunction with the council, it seemed to be the opinion of the majority that it would be difficult to set a fee for one single item, single this examination out and try to set a fee for it. Furthermore, there are other reasons that interfere with carrying it out, even though such a thing would be desirable.

We therefore would move the adoption of the report striking out clause number one.

DR. H. M. WORKMAN: I second the motion.

DR. W. F. BRAASCH: The question of opinion by the House of Delegates is the medical phase of fraternal organizations.

PRESIDENT WRIGHT: What particular thing did you have in mind when you suggested that? I wouldn't know just what that meant.

DR. F. J. SAVAGE (St. Paul): I really had in mind two things. The first is the situation on fraternal lodge practice similar to what was briefly described as having prevailed in Stillwater, where in a small town twenty-five per cent of the families belong to certain lodges and where the doctors were getting about eight or nine cents per call. For other organizations where services are rendered for a fee very much below the ordinary one for which that work is done.

PRESIDENT WRIGHT: I think the House of Delegates might make a counter suggestion to this committee and that is that we ask them for their opinion on certain phases of contract practice. You see Dr. Savage expressed himself very definitely on this one phase of life insurance. There are other things that probably need an expression of opinion just as badly as this. I frankly admit that I, for one, would want to take it under consideration seriously before I made any definite recommendation, because it seems to me this type of thing must be handled in the local organization. We cannot tell the members on the range how they should handle these questions nor can we tell St. Paul, Duluth, or anywhere else. Personally I feel that the State Association should be exceedingly careful not to meddle in the affairs of local societies more than is necessary.

I call for a vote on this amendment. In regard to that expression of opinion I would like to ask Dr. Workman's advice on how to proceed with that recommendation.

DR. H. M. WORKMAN: Why not get it next year from county societies? Let them say what they want to do.

PRESIDENT WRIGHT: Couldn't you amend that to read that we ask each local society for some expression of opinion on these things? Would that be possible?

DR. W. F. BRAASCH: Give it to the next Committee on Contract Practice.

PRESIDENT WRIGHT: That the House of Delegates ask the local societies to give the Contract Practice Committee an expression of opinion on these specified phases of contract practice.

If that meets with the approval of Dr. Savage and Dr. Braasch, I will call for a vote.

The motion was put to a vote and carried.

PRESIDENT WRIGHT: Next is the report of the Committee on Expert Testimony.

I might say, before we go any further, it is not obligatory on the part of the House of Delegates to have these reports read. All of these reports have been mailed to every single delegate and it is the will of this organization whether they want to hear these reports or not. Of course they are all very excellent reports and I feel it is time well spent to listen to them.

Dr. S. H. Boyer read the report of the Expert Testimony Committee.

## REPORT OF COMMITTEE ON EXPERT TESTIMONY

Your Committee on Expert Testimony, desiring to submit an intelligent report, found it necessary to get its bearings, to determine the purpose of such a committee. Evidently it was intended to submit recommendations for the correction of abuses or for enhancing the value of medical expert testimony in our courts. This led us to ask if there be abuses, and if so what they are. If such testimony is lacking in value, then why and in what way? This in turn caused us to think of our courts, court procedures and rules of evidence.

Our courts are for the purpose of determining the truth concerning questions brought to their consideration.

Expert witnesses are called because of their supposed superior knowledge concerning subjects upon which the court desires reliable information.

Rules of evidence are a part of an orderly court procedure. They are for the purpose of excluding all testimony that does not stand in proper relation to the case on trial. To us laymen it often seems as though the truth is excluded. As a matter of fact any lawyer is at liberty to submit to the court all evidence available, but he must do it according to rule. A good lawyer has but little difficulty in getting all the essential facts and opinions into the record. Poor lawyers, like poor doctors, overlook many points and meet with many failures. It has been said that medical expert testimony is distorted by present court procedure and legal technic, but I suspect that medical testimony is no more perverted by attorneys than is other testimony. It is more sharply drawn to the attention of the public than is any other kind. That is natural enough for it deals with the human creature himself, not his possessions, not with the objects with which he is surrounded, but with the creature himself. Moreover the physician holds an outstanding position in the community. He is thought to be rather better informed than the average person. If this were not so the medical witness would be lost in oblivion insofar as juries and public are concerned as are all others. But inasmuch as this witness is conspicuous even though frequently futile, let us strive to make him

mentally honest, morally respectable, a credit to his profession, a truth-telling witness or not a witness at all.

Complaint is made that doctors disagree. I have heard it said that such disagreement is the greatest scandal in the courts. Medical witnesses may disagree diametrically but honestly. I have known physicians of unimpeachable honor and credibility to express exactly opposite opinions with precisely the same set of facts before them. Is this at variance with what happens in every supreme court, including that of the United States, throughout the length and breadth of this fair land? This honest difference of opinion may be put down as the result of personal equation. No legislation can change this. It is also true that opinions submitted in answer to the hypotheses of opposing counsel may be absolutely true but may appear to be at variance because of the nature of the hypothetical questions submitted and the adroitness of attorneys in their presentation to juries. Unhappily there are doctors whose point of view is such that they lend themselves to a case with partisanship and bias. And yet more unhappily there are some whose dishonesty cannot be doubted. They are ever ready to give evidence in any way and at any time. Such persons are devoid of that true professional spirit which places honor and truthfulness above all else. These are the ones who are most responsible for whatever discredit attaches to the medical expert. Little do they realize that the courts come to know them for what they are, that their professional brethren know them and even juries begin to recognize their infamy after a while.

A thing in court which nearly always appears to annoy experts of all kinds is the hypothetical question and that to which it is corollary, the legal thesis. The lawyer gathers together all the facts available to him in a case and then proceeds to the elaboration of his thesis. He seeks to show that the evidence supports a theory which he entertains and desires to prove as being correct. This attitude always ruffles the scientific mind. The legal approach and the scientific approach are different. The one seeks to prove a theory; the other aims to find the facts and learn the lesson they teach. The one may be able to prove in court that a case of typhoid fever wasn't such at all, but *probably* something else; whereas the other with scientific data and clinical findings knows there is no probability at all, only the incontrovertible fact that typhoid exists. One attorney says, "The truth lies here and I can prove it." The opposing attorney says, "The truth rests there and I can prove it." The scientist says, "I wonder what all this means. I am going to find out." The legal method of approach is adapted to the composition of human differences and deals with the desires of living people. It is wholly necessary and doubtless could not be otherwise. The scientific approach deals with matter which cannot enter into personal dispute. The decision in court will depend upon the evidence, pro and con, admitted under the working rules. A really good lawyer will so shape his case that he will get his evidence into the record.

So in the end the aims of justice will be attained. Moreover the really honest lawyer, the one of character, will not seek to prove the highly improbable.

The lawyers' theses are necessary to the solution of legal problems and someplace between the opposite extremes the truth will be found.

The jury system is the fruit of the judicial abuses of power, betrayal of trust and stupidity of judgment existent in an ancient past. Probably it is just as well that we doctors "stick to our last" and not try to doctor a possibly sick but nevertheless benign system. We recognize many apparent shortcomings in the jury system. One of these is that of permitting a jury of laymen to pass judgment upon the comparative values of technical descriptions, discussions and opinions as developed in our courts. It is analogous to the case of the sick man who called many doctors, obtained many ideas as to details of treatment, and then proceeded to tell his attending physician how to treat him. It would be just as logical for a doctor to try to run a railroad after getting advice from many railroad presidents. If all the facts and apparently conflicting opinions in these medico-legal cases could be thoroughly and judicially threshed out before presentation to a jury, and all the dross and worthless stuff excluded from the testimony, a great gain would be made. This opinion does not rest upon an uncertain foundation. It is confirmed by the experiences and results of the compensation courts working under the Minnesota Industrial Commission. The referees conducting these courts have broad discretionary powers in relation to legal technicalities. They are after the truth. They are not curbed in their inquisitorial approach to expert witnesses by the presence of a jury, therefore they cannot "prejudice the case" as the lawyers say. They get a tremendous experience with medical men from all over the state. They soon learn to know the standard and accepted professional ideas of the period. They develop a keen insight into the character of medical men and the honesty and accuracy of their testimony. Their findings are submitted to the industrial commission and the final award of that commission usually stands. A plaintiff, however, is at liberty to appeal for a retrial if he is not satisfied. It may be that *all* technical testimony should be clarified and condensed before being given to a jury. If that is desirable, if it is the right way, then we may be sure that in due course the bar will see that it is done. Certainly it is not our job. We may suggest, in friendly interest, but it is for the legal profession to do.

Centuries of experience on the part of courts and lawyers has evolved our present system. The system is not the result of a few days of intensified study ending in resolutions of recommendation. It is the outcome of years upon years of thought and study and discussion and experience and corrective change in theory and practice. The best minds in the legal profession have devoted the whole span of life to the study and solution of such problems as your committee is asked to report upon. Such minds are still working toward improved methods just as surely as the great

collective mind of the medical profession is ever striving to advance in the science and art of healing the sick and of preventing disease. Let us not suppose that the legal profession does not wish to improve nor that it has failed to give the subject of expert testimony the most crude consideration. Let us rather suppose that in the light of its experience and needs the most suitable methods have been established, and that changes will be made as changing conditions may require.

Let us remember the law does not consider that the decision in a single case in court represents absolute certainty as to the justice of that single decision. Rather does it represent justice so far as determinable in that particular case. As a matter of fact justice may have been defeated in that instance, and largely because of the admission of the wrong testimony and the exclusion of the right testimony but in accordance with the rules of evidence. While this may occur sometimes experience has shown that in the trial of thousands of cases the ends of justice are served in the vast majority of them. The courts view the results of their work in the large, and cognizant of the comparative values of accepted methods over those of the past, and are loath to make changes in their methods without the most careful consideration. And after all is this so different from our own methods of progress? Minot and Murphy told us of their cases of pernicious anemia successfully treated with liver. Did we accept their conclusions as final proof of the value of liver in that disease? We did not. Instead keen and studious medical minds all over the civilized world began to try it out. Some combated the idea and suggested that a high protein and vitamin diet would accomplish the same result. Well, the cumulative experience of the medical profession has proven the value of liver, or its dried extract, over all other known methods of treatment of that dread disease. The accepted methods of treating appendicitis, goiter, peptic ulcer, miscarriage and other diseases are marked by a limited number of failures, but that fact does not condemn the method. The guiding principles are sound though the future may bring improved technic.

Thus in the light of our professional experience we give the best we have and I am strong in my faith that the legal profession does the same. Perfection is not at hand and some of the imperfections in the system of adducing expert testimony are quite apparent. No harm and possibly good may come from discussing them.

Apparently the medical profession is nettled because of discredit cast upon it through the diametrically opposite expressions of opinion on the part of medical witnesses. This difference of opinion is not confined to medical witnesses, however. It is perfectly apparent in all other kinds of witnesses also. Whether this variability in the statements of opposing witnesses came as a result of present court procedure or preceded it, I haven't the faintest idea, but I suspect the two have been contesting each other's claim to priority for a long time.

At this point it is reasonable to remark that "human nature" may be considered as a chief element in the

problem. Each lawyer wants to win his case. Each constructs a thesis which he submits to the expert witness of his choice. Each presents his thesis in glowing terms, seeking endorsement on the part of the expert. If the latter is not wary he may find when he appears in court that there is another side and point of view he well might have considered most carefully before he expressed an opinion or gave his final advice to the attorney seeking it. This lack of foresight, perhaps due to meager knowledge, is apt to place the witness in the position of self defense while under cross examination. How much better it would be to insist upon having all available facts in the case, to consider all possible angles, to study the history and condition of the plaintiff (in case of personal injury suit) most carefully and make such study in the same unprejudiced way one does in the study of his patients. Such a course leaves one in a secure position. An opinion based upon such a study is worth while. The prospective witness is then in a position to state definitely what he thinks, what he will testify to and whether or not he will testify at all. Such a course requires both effort and courage, but in what a wholesome and self-respecting position it places one. We are apt to be too easily lured into difficult, trying and oftentimes discreditable positions by the glamour of appearing in court, the zest of contest and the attorney's enthusiasm. It is so very human to yield to such influences, to get into the game as it were, and in conscious or unconscious partisanship lose sight of the high duty of affording intelligent accurate and unbiased information to the court. If the bickerings of lawyers, court procedure and rules of evidence forestall a full and honest expression of opinion then the blame rests with the courts and legal profession. If the testimony is biased—and therefore untrue—based upon insufficient data, or given by one but poorly informed professionally, the fault then rests chiefly with the medical witness.

No recommendation this committee can offer, no possible legislative enactment, can alter these perfectly human tendencies. Rather must we as a profession so constantly frown upon the medical witness whose testimony is perverted, no matter how nor why, that the force of our collective judgment alone will deter him from placing himself in such a false and unenviable position.

Attorneys at law are going to choose their own witnesses in the future as they have in the past and they will choose those whose views and opinions fit the needs of the case in hand. To ask for a law forbidding them to do so, or compelling them to stipulate that each side call its own witnesses, the latter to choose a third and neutral one, or to stipulate that the court choose the medical witnesses, would really be a stupid thing for us to do. Inasmuch as all witnesses of all kinds and degrees are subject to the same human weaknesses and the same sort of technical management in the courts, does it seem reasonable to suppose that an exception should be made in the handling of the medical expert? Would not such an exception tend to blunderingly disturb or disrupt the established

order of courts? Is it not more than likely that those learned in the law can manage their professional affairs to better advantage than we can manage for them? Is it not presumptuous for us to seek to remedy the evils of legal practice without first having remedied the evils within our own ranks? A very learned jurist said to me: "Both professions need a — good housecleaning. Get rid of the dishonest lawyers and the dishonest doctors and we will very soon correct the expert testimony situation." Now is not that the crux of the situation? I would suggest that we apply ourselves assiduously to setting our house in order.

At this point it is quite appropriate for me to call your attention to what the legal profession has been doing in this direction. Covering a period from 1908 to 1927 inclusive the Minnesota Supreme Court suspended eleven (11) lawyers for periods ranging from 6 months to 2 years, reprimanded two (2), tried and found not guilty three (3), disbarred twenty-seven (27).

1908 to 1917—12 subjected to discipline  
1918 to 1927—33 subjected to discipline  
1927 alone —15 subjected to discipline

More disciplined in the last 3 years than in the 17 preceding years.

More disciplined in the last 5 years than in all the preceding years.

By consulting the above figures you will see that in the entire period covered the supreme court of this state disciplined 45 lawyers who had been engaged in the active and lawful practice of their profession. You will also note that during the last 5 years the lawyers are apparently drawing the reins a good deal tighter.

May I ask if the medical profession in this state has ever disciplined any of its members? And if it has done so has its efforts in that direction compared favorably with those of the legal profession? How many licenses have been revoked during the entire existence of the State Board of Medical Examiners? I venture to say not to exceed three and I am not certain that in these instances the doctors had not already been convicted of crime and were behind prison bars.

In conclusion I submit the notion that the committee on medical ethics should handle the question of expert medical testimony. It is their function to develop our system of ethics, to study its theory and practical application. Its ethical rulings in regard to the questionable medical witness should be such as to favor professional ostracism, a lash that stings and under which no man can stand. It should guard the citadel of our professional honor. It is the instrumentality through which our house may be swept clean. It may encourage and command that robust mental honesty which alone will solve the problem of the medical witness.

#### COMMENT

1. The medical witness is conspicuous, therefore errors and differences are observed.

2. Disagreement between witnesses is inevitable. The function of courts is to harmonize the difference.

3. Dishonesty on the part of doctors and lawyers is the chief reason for the criticisms concerning medical testimony.

4. The lawyers' theses are necessary to the solution of legal problems and some place between the opposite extremes is found the truth.

5. Juries of laymen should not be permitted to pass upon the significance of technical testimony.

6. It is not the doctor's job to make laws governing legal technic. The medical profession may offer suggestions but should not interfere with the lawyers in the management of their affairs.

7. Human nature bears its share of responsibility. Thus attorneys, witnesses and juries are influenced. Statutory enactment cannot change this influence.

8. The prospective medical witness should study the problem submitted most thoroughly before expressing an opinion to either attorney or court.

9. The influence of the medical profession should be thrown against the witness of doubtful credibility. We had better "clean house."

10. The committee on medical ethics should study the present status of the medical witness in relation to ethics. It should be able to do something that would go a long way toward improving conditions within our own ranks.

We would suggest that the ideas herewith submitted, together with a résumé of the discussion by the House of Delegates be forwarded to the Minnesota Bar Association for perusal and consideration.

S. H. BOYER, Chairman  
C. A. NEUMAN, Secretary  
ARTHUR SWEENEY  
ARTHUR E. BENJAMIN  
C. J. HOLMAN

Committee on Expert Testimony.

At the meeting of the committee held February 14, 1928, the following resolutions were passed and signed by the first three members of the committee who were present:

It is resolved that the regulation of Expert Testimony is not a proper function of a Medical Society, but must wait upon such reform of court procedure as the lawyers and judges in their wisdom may determine.

It is also resolved that the Committee on Expert Testimony be abolished.

(Applause.)

DR. S. H. BOYER (Duluth): I don't want to annoy you but I want to call this to your attention. I think that the jury system is the chief fault that we have to contend with. The jury system is being abolished, is being done away with little by little. For instance, our compensation court has taken from juries a certain line of cases. Those cases never get into the hands of a jury.

You have heard something about the compulsory auto insurance. On the face of it, it looks as though we were all going to be compelled to carry insurance, but it doesn't stop there. This compulsory auto in-

insurance law as they are establishing it in New York fixes the amount of compensation that the agent shall have. The jury never gets it. It is analogous, don't you think, to your industrial cases? In Connecticut and one or two other states they have what they call waiver laws applicable in criminal cases where criminals may waive the right to a trial by jury. It has been demonstrated in the states where that law exists and that waiver obtains that they are getting a larger percentage of convictions and are reducing crime and reducing the number of cases of litigation.

Then you have the children's court. In some of our states they now provide that certain crimes committed by young people and classed as felonies may be tried as misdemeanors in these courts without a jury. Again the jury is being disposed of.

Then you have your courts of special sessions in which the tried does not have a jury and that applies to small cases, little cases as in our justice courts. But now it is being extended and applied to more serious crimes.

In regard to Expert Testimony, particularly in relation to insanity cases; criminals putting in a defense on account of sudden insanity. The late Remus case has stirred into action a special committee of the United States Crime Board, or National Crime Commission, into studying that situation, and they are recommending that all these criminal cases in which insanity is claimed as a defense be not tried in the courts but that they be passed upon by expert psychiatrists, the reports being made to the court and not to the jury; and their findings shall stand and the criminal will be disposed of in accordance with what his mental condition really is.

It may interest you to know that in the state of Massachusetts that law is in operation and also in the state of Colorado. They determine whether the criminal is of sound mind or not. If he is sound of mind he tried as usual before a jury; if he is not sound of mind he is not tried at all but disposed of by the court. (Applause.)

PRESIDENT WRIGHT: I want to commend this report.

DR. W. F. BRAASCH: The Reference Committee moves the adoption of the Expert Testimony Committee report and in addition recommends that the committee should be continued as a committee on medico-legal affairs; that all problems related to the State Association and members should be referred to them.

DR. H. M. WORKMAN: I move its adoption.

DR. G. S. WATTAM (Warren): I second the motion.

The motion was put to a vote and carried.

PRESIDENT WRIGHT: The University Relations Committee has had a meeting at the University Hospital. No action was taken.

#### REPORT OF UNIVERSITY RELATIONS COMMITTEE

This committee had one meeting, February 10, 1928, at the University Hospital.

The needs of the University Hospital were discussed and the value of the hospital as a teaching adjunct to the Medical School was emphasized.

There was a unanimous agreement that the per diem rate for the county patient should be raised from \$3.00 to \$3.75 and that the Minnesota General Hospital should be used largely for this type of patient. Upon discussion of the support of the hospital, it seemed logical, as Mr. Fesler proposed, to ask for the appropriation for the care of county patients. The expense of teaching in the hospital, however, is a definite function of the Medical School and should be cared for by their budget.

In addition to this group of patients, provision should be made for sending cases into the University Hospital from the "Out-Patient" service which are particularly interesting from the standpoint of teaching. It was the opinion of Mr. Fesler that this group, also, should be taken care of from the funds of the Medical School.

The pay patient group was discussed and it was explained by Mr. Fesler that a comparatively few private patients were taken care of at the University Hospital; that many patients entered as private patients but had to be transferred to the public wards because of lack of funds, and that, so far, the full time medical teachers had availed themselves of only a very small number of beds for private patients.

No definite action of any kind was taken. Mr. Fesler seemed very anxious to give us all the information he could in regard to the operation of the Hospital and frankly expressed his desire to cooperate in every way with the medical profession and be of service to them.

Respectfully submitted,

C. B. WRIGHT, Chairman.

Next is the report of the Heart Committee. Is Dr. Willius here?

Secretary Meyerding read the report of the Heart Committee.

#### REPORT OF HEART COMMITTEE\*

Dear Doctor Meyerding:

Your letter has been received and the reason that I have not responded is that there is no response to make.

I don't see what is the matter, but it is impossible apparently to get 100 per cent attendance to our meetings or to have the men elicit the interest in the problem that they should.

I mentioned some of our difficulties to you at the time of your recent visit in Rochester, and the individual in question failed to show up at our last meeting held in St. Paul. I feel rather discouraged about the whole situation and believe that perhaps a dissolution of the committee would be a splendid thing and perhaps the President would see fit to appoint a committee of an entirely different personnel that could work together.

Very truly yours,

F. A. WILLIUS.

\*Communication to Dr. E. A. Meyerding.

PRESIDENT WRIGHT: Dr. Braasch, have you any suggestions to make?

DR. W. F. BRAASCH: The Reference Committee has not seen the report. I move that it be referred to the council for consideration.

DR. C. L. SCOFIELD: I second the motion.

PRESIDENT WRIGHT: Any remarks?

The motion was put to a vote and carried.

PRESIDENT WRIGHT: The next is the report of the Committee on Military Affairs, Dr. Knight. Is Dr. Ralph Knight here?

Secretary Meyerding read the report of the Military Affairs Committee.

### REPORT OF THE MILITARY AFFAIRS COMMITTEE

The Military Affairs Committee was established as a link of communication and consultation between the War Department of the United States and the Organized Medical Profession of Minnesota. The Committee has to report that during the past year there has been call for practically no activity, with the exception of answering an inquiry or two concerning military conditions here.

Respectfully submitted,

RALPH T. KNIGHT, Chairman.

PRESIDENT WRIGHT: I don't believe this report calls for any specific action at all. If there are no objections we will accept it as read.

Next we will have the report of the Historical Committee. Dr. Hamilton is Chairman of that Committee. Is he here?

Dr. Workman, would you make this report?

### REPORT OF THE HISTORICAL COMMITTEE

To the Minnesota State Medical Association:

The following is a further report of your Committee to gather data concerning the history of the Minnesota State Medical Association. The Committee has held three meetings and has decided on the following tentative headings under which the history should be written. These have already been reported to you.

1. Pioneer Medicine in Minnesota, to include Special Articles on the Individual Pioneer Medical Men.

2. The State of General Medicine at the Time of the Pioneers.

3. The Birth and Subsequent History of the Minnesota State Medical Society.

4. Other Special Medical Societies.

5. The Medical Literature of Minnesota.

6. Medical Teaching in Minnesota.

7. The State Hospitals in Minnesota.

8. Other Hospitals in Minnesota.

9. Medical Books and Journals in Minnesota.

10. Minnesota and Military and Naval Medicine.

11. The Mayo Clinic.

12. Special Consideration of any Outstanding Achievements in Medicine or Surgery in Minnesota.

13. History of Medical Legislation in Minnesota.

14. History of the State Board of Health in Minnesota.

15. History of the State Board of Medical Examiners in Minnesota.

Correspondents have been appointed by your body from the different counties in the state and some of these correspondents have already handed in fairly satisfactory data concerning their own individual districts. Dr. H. M. Workman has special charge of the county records. In certain instances, considerable prodding will be required.

Some of the special chapters are also fairly on the way but it remains the feeling of the Committee that the collection of the necessary material and, particularly, its arrangement, will prove a long and arduous task.

The Committee acknowledges with gratitude the apportionment of Five Hundred Dollars (\$500.00) to aid in its work. This money was requested with the idea that someone should be employed to investigate all possible sources of original information and place the result in the hands of those who are to arrange the material for publication, but further investigation and discussion of the subject has convinced us that we are not ready at this moment to enter into an arrangement with anyone for such a purpose, feeling that the money would be spent long before the necessary original sources have been investigated, to say nothing of the fact that the material secured for us might not be that which is desired. We request that the money be left available for future use by the Committee when it appears to be advisable.

Your Committee is still unable to report the cost of final publication. We still have only a very vague idea of the amount of material which will ultimately be available, but, in all instances where any individual has been asked to prepare the history of any subject or any situation, it has been made clear that the final article must be brought within such limits of space as the Committee in the end may decide to be advisable.

Mrs. La Du of the State Board of Control has agreed to write the article on the State Hospitals of Minnesota. Dr. Braasch has been chosen by the Mayo Clinic to prepare the article concerning that organization. Dr. John Armstrong, of St. Paul, is preparing the article on Pioneer Medicine in Minnesota and I have the task of preparing the article on the Birth and Subsequent History of the Minnesota State Medical Society. Dr. R. O. Beard is preparing the article on Medical Teaching in Minnesota. Dr. N. O. Pearce has agreed to write the article on Hospitals in Minnesota, which will include institutions additional to those controlled by the state.

The questionnaire prepared by Dr. H. M. Workman for the county societies has already been submitted to you.

The list of correspondence from the local societies I need hardly read, as it is rather lengthy and as the personnel was selected by your Council.

Respectfully submitted,

ARTHUR S. HAMILTON.

DR. H. M. WORKMAN (Traey): The Committee has met a number of times. Many of the men present have received a letter asking you to give us all the information you could and damn few of you ever answered the letter. I don't know why. We sent you an addressed envelope and sent you a questionnaire. We can't do very much without your help, and I wish you men would appreciate the great amount of work that is up to this committee.

Dr. Hamilton has done a great deal of work. We divided the topics under a number of heads and are getting it out the best we can. Dr. Hamilton says I have gotten the biggest part of the work and that is getting replies from the county members in regard to the early practitioners, the pioneers of Minnesota medicine. In all of our localities there were some men who were there first and some of you men know about them. If you would only send that to me we would have a foundation to work on.

I have from Dr. Daniels of St. Peter a report in regard to his father at Fort Ridgley before the Indian outbreak. I will have from Dr. Ridgeway a report in regard to Lae qui Parle County, I think it was, and Dr. Catlin, I am very sure, is going to furnish me some matter from that section. His father, I believe, was the first physician at St. Peter.

It is those things we want, and I know that every one of you men can furnish something if you only will, and I hope you will. (Applause.)

DR. W. F. BRAASCH: We recommend the adoption of that report and that the committee be continued.

DR. C. L. SCOFIELD: I second the motion.

PRESIDENT WRIGHT: It is open for discussion.

DR. O. S. HANSEN (Minneapolis): A few years ago the Necrologie Committee suggested that questionnaires be sent to all members of the Minnesota State Medical Society, asking them for biographical information. That information would not be of direct bearing on Dr. Hamilton's work right now in creating the history of the early days of medicine but it would be building up the history for the next generation of medicine.

That has been a very difficult thing, we have found, in the work of the Hennepin Medical Society in getting the information of the members who have died. It is difficult to get accurate information at a time when the family is very much disturbed. If we had that information on file when we attempted to have this for the Hennepin Medical Society, it would give us a great deal of accurate information.

I think this particular activity would be of value to the Historical Committee in future years and would suggest that a biographical questionnaire be sent to each member, and that this be sent every five years or at a stated time, so that it could be kept up to date, and that a question be included in that questionnaire suggesting that important information or interesting information be added that the members would think might be of interest to the society in future years.

PRESIDENT WRIGHT: That is true, Dr. Hansen. There seems to be a lot to write about and men seem particularly loath to write their own obituary. I think the best way to do it would be to have a committee

actually get that information. Call a man in and ask him questions and take it down yourself. I don't believe you will ever get it any other way.

Any other discussion?

DR. C. L. SCOFIELD (Benson): I would like to ask, Mr. President, whether you contemplate making this history more than ancient, medieval or want to get down to the present time?

DR. H. M. WORKMAN: We want to bring it down to the present time. The latter part is going to be a very easy matter to get, but it is the ancient history of the pioneers that is hard to get. That is the thing we are looking for mostly right now. A lot of it we will not be able to publish, but, if placed on file as Dr. Hansen suggested, it will be available for future reference.

PRESIDENT WRIGHT: Any further discussion, questions, amendments or remarks of any kind? If not, I will put the motion to a vote.

The motion was put to a vote and carried.

PRESIDENT WRIGHT: We will now proceed to the report of the Delegate to the American Medical Association, Dr. Burnap.

We have a letter from Dr. Litzenberg in which he says: "I have yours asking for the Report of the House of Delegates of the American Medical Society. There has not been a meeting of the House of Delegates of the American Medical Society since the last State Society meeting. Therefore, we have no report to make." Would you want to make any amendments or any additions?

DR. W. L. BURNAP (Fergus Falls): I think that report is very complete.

Since I was called upon I would like to say one word which isn't necessary but it is in regard to the work of the State Society and their officers. Some fellows from outside may not realize the tremendous amount of time these committeemen and President Wright have put on the work of the Association.

Dr. Meyerding told me there has hardly been a day that he hasn't had a conference with Dr. Wright during the year. Sometimes it seems as though we have been pushing too hard, but this society has been getting somewhere, particularly with the enthusiastic help of the committeemen and the tremendous amount of work they have done.

I also want to second the suggestion that we stand by the public health work. Dr. Meyerding is facing some serious problems and the only way they will be solved is that every one get behind the Public Health Association. This is a vital matter and we must do that.

PRESIDENT WRIGHT: Thank you, Dr. Burnap.

Next is the report of the Delegate to the Wisconsin Medical Society. I think you were appointed delegate, Dr. Braasch.

DR. W. F. BRAASCH: I am to make that report and have it with me somewhere.

PRESIDENT WRIGHT: I will take the next one, that is also yours, the report of the Regional Conference.

DR. W. F. BRAASCH: The Regional Conference was held yesterday and there were representatives present

from South Dakota, Wisconsin, and Minnesota. I think we accomplished quite a lot. We went over a lot of ground and entertained views in regard to the Basic Science Bill and in regard to the Nebraska Lien Law, which enables the physician to place a lien on the patient who does not pay the bill. Particularly is that true of accident cases. We also went over a number of other subjects almost too numerous to mention.

There is one item that we took up and that was reciprocity between Basic Science Boards. That has been rather a stumbling block between the Wisconsin and Minnesota Boards and we are trying to iron that out. We were fortunate enough to have Dr. Woodward with us from the Bureau of Legal Affairs of the American Medical Association and he made some very fine interpretations that ought to help the Basic Science Board considerably in the future. He also went over a number of medical matters of legal interest which were certainly very instructive.

After the meeting was over I talked to Mr. Crownhart, the lay secretary of the Wisconsin Association, and we discussed the affairs of the Wisconsin Association. He mentioned something which interested me very much, namely this: That he proposed to have the county secretaries meet in Chicago this winter, instead of in Milwaukee where they usually meet, at the American Medical Association headquarters, then go through the building and get acquainted with the American Medical Association, and then have various members of the American Medical Association talk to them about the work. It seems an excellent thing. It ought to stimulate them a great deal and get them interested in the various affairs of medical progress such as could be done in no other way.

With that as an inspiration Dr. Meyerding, Dr. Wright and I were discussing it and it seemed that it might be in the realm of possibility, providing we could get the sanction of the House of Delegates and Council; that Dr. Meyerding assemble his county secretaries, and get probably thirty of them in a car and go to Chicago and meet with the Wisconsin delegates at the same time. They could all go through the building and become acquainted with them and have that stimulus that they have derived from that as well as the talk of the American Medical Association officials. It ought to be a splendid education and stimulus for the secretaries of the state. We are quite agreed that if it is feasible it ought to be done.

As I said before, this meeting is a very valuable thing and we ought to get a lot out of it. We agreed to meet every year in Minneapolis or St. Paul, because it is the geographical center of distribution for North and South Dakota, and we also tried to get Iowa and Montana in on this. It ought to be a clearing house for action of great value.

PRESIDENT WRIGHT: You know the most valuable man in any society is the Secretary. If he isn't alive and doesn't understand the game, you are going to have a pretty poor society. The American Medical Association officials have agreed to entertain the delegates in Chicago; they are very anxious for this type of organization work.

Have you any additional comments or resolutions, Dr. Braasch, aside from the amendments which we laid over from this morning?

DR. W. F. BRAASCH: There are two resolutions which ought to be taken up.

PRESIDENT WRIGHT: For some reason Dr. Hare's report was not given this morning. Is he here?

Dr. E. R. Hare read the Treasurer's Report.

## REPORT OF THE TREASURER

For the Year Ending December 31, 1927

### RECEIPTS

BALANCE ON HAND DECEMBER 31, 1926	
Minneapolis Trust Co.....	\$ 7,971.50
Minnesota Transfer State Bank.....	60.10
Bonds and Mortgages.....	9,000.00
Minnesota Medicine—	
Advertising .....	8,455.88
Subscriptions .....	4,764.46
Assessment .....	560.00
Membership dues 1927.....	29,569.00
Membership dues 1928.....	180.00
Interest	
Investments .....	400.00
Bank balances .....	247.11
Educational Fund.....	300.59
Miscellaneous .....	103.02
Checks outstanding 12/31/1927.....	75.00
	<hr/>
	\$61,686.66

### DISBURSEMENTS

First Minneapolis Trust Co.—	
Bonds & Mortgages, etc.....	\$11,700.00
Minnesota Medicine.....	12,788.52
Legal Expense.....	407.20
Annual Meeting.....	1,420.38
Council .....	108.19
Salaries .....	4,249.95
Educational Expense .....	18,709.18
Public Health and Hospital.....	1,899.02
Secy's Travel Expense, Rent, T. & T., etc.....	537.98
Miscellaneous .....	6,769.52
On Hand	
First Minneapolis Trust.....	1,290.09
Minnesota Transfer State Bank.....	211.89
Checks outstanding 12/21/1926.....	1,594.74
	<hr/>
	\$61,686.66

Respectfully submitted,  
EARLE R. HARE, Treasurer.

PRESIDENT WRIGHT: You have heard this report. Are there any comments? The same report was covered this morning, and of course the detailed report will be published.

DR. H. M. WORKMAN: I move the adoption of the report.

DR. O. T. SHERPING: I second the motion.

DR. J. M. ARMSTRONG (St. Paul): Has this report been audited?

DR. E. R. HARE: The report was audited for the fiscal year and audited the first week in January. The Secretary's and Treasurer's books were audited and the accounts harmonized in the two sets of books.

The motion was put to a vote and carried.

PRESIDENT WRIGHT: The next on the program is the report of the Reference Committee.

DR. W. F. BRAASCH: I might say a word concerning my visit to the meeting in Wisconsin. I haven't the notes but I recall several items.

In the first place the meeting was in Eau Claire. Seven hundred were present out of 2,200 registrations. I was particularly impressed with the power of the Legislative Committee; they have a strangle hold on the legislature. It is quite remarkable what they have done. They got the Basic Science Bill without much trouble. They also tried to pass a bill by consent of the legislature and it was vetoed by the Governor, to the effect that the state of Wisconsin give \$5,000 to three state board medical examiners, who were given police duty to round up delinquents, and so forth. The state of Wisconsin paid that. They are going to get that bill through at the next legislature without doubt. That shows the power they have.

There is one thing I remember very well, and that was on the second day of the meeting they went out to the grave of Dr. John Lyman of Eau Claire, who died the year before and was a great leader of the profession, doing a great deal towards the progress of Wisconsin medical activities, and made a very fitting Memorial talk and laid a wreath on the grave. I thought it was a wonderful thing.

On the whole the meeting was a very successful one and I am sure they are fully as active as we are. I would say this, that I think this regional conference in a measure overcomes the necessity for the society being represented at these meetings because they come to us and we have an exchange of views, so I question the necessity for further continuation of this work.

So far as additional resolutions are concerned, one I read this morning and one is as follows:

## RESOLUTION

### BE IT RESOLVED THAT:

We desire to express our appreciation of the work of the Department of Pathology of the University of Minnesota, especially for their coöperation with the Medical Profession of the State. The postmortem service at Minnesota is the largest in the United States. We respectfully urge the Regents to give this department better support. It is greatly in need of more space for the housing of a museum and for the handling of graduate students. These facilities could be provided by the completion of the Anatomy Building.

(Signed) F. C. SCHULTZ, M.D.  
Chairman, Ramsey County Delegates.

DR. W. F. BRAASCH: I move the adoption of this resolution.

PRESIDENT WRIGHT: Do I hear a second to that motion?

DR. H. M. WORKMAN: I second the motion.

The motion was put to a vote and carried.

DR. W. F. BRAASCH: The other resolution which I have to offer is that the By-laws be amended to the effect that the Reference Committee be made a permanent committee and that it should consist of three members of the Association, to be appointed by the President for a term of one year.

DR. O. T. SHERPING: I will second the motion.

PRESIDENT WRIGHT: It isn't necessary to do anything.

Under the item of New Business, are there any communications?

We will proceed to act on the proposed amendment to the Constitution and By-laws.

DR. W. A. COVENTRY (Duluth): I move you that Chapter I of the By-laws, which reads, "These By-laws may be amended at any annual session by a majority of votes of all delegates present at that session after the amendment has been laid on the table one day," that this By-law be suspended and proceed to ballot on the By-laws that were proposed this morning.

The motion was seconded by several, was put to a vote and carried unanimously.

PRESIDENT WRIGHT: We will proceed to vote on these amendments and I will ask Dr. Braasch to read these amendments again and I think we had better vote on each one separately.

Dr. Braasch read the Constitution and amendment of Article 4, Section 1.

Recommended that Article IV, Section I, be altered so as to conform to the constitution of the American Medical Association, which includes (1) the elimination of the word "Emeritus" and substitution of the word "Affiliate"; (2) after the word "Honorary" add "Associate"; (3) substitute for "60" the figure "65."

DR. W. F. BRAASCH: I move that the amendment to the Constitution be laid on the table for a year and amendments to the By-laws be adopted.

PRESIDENT WRIGHT: Let's discuss the Constitution first.

Is there a second to that amendment to the Constitution?

DR. W. A. COVENTRY: I second the motion.

PRESIDENT WRIGHT: You have heard the amendment to the Constitution and the second. Are there any remarks?

DR. G. S. WATTAM (Warren): Is it necessary to discuss that at this time? It has to come up a year from now.

PRESIDENT WRIGHT: I don't think it is necessary. I think it is probably out of order.

We will now proceed to the amendment of the By-laws.

Dr. Braasch read the amendment to the By-laws of Chapter I, Section 3.

By-Laws, Chapter I, Section III, insert after the word Emeritus, "or Affiliate"; after the word Honorary,

"or Associate"; after the word Members, "and guests"; eliminate "and Visiting."

DR. W. F. BRAASCH: I move the adoption of the amendment.

DR. H. M. WORKMAN: I second the motion.

PRESIDENT WRIGHT: If any one has any question to ask about it I should be very glad to have it explained.

I should like to hear from Dr. Meyerding, because it is largely through headquarters in Chicago that we have been pushed into this situation. They are constantly writing Dr. Meyerding about the classification of members.

SECRETARY MEYERDING: Emeritus membership requires a man to be sixty years of age and physically disabled. The American Medical Association has nothing like that but has an Affiliate membership, providing you are sixty-five years of age and have been a continuous member for fifteen years. We think by raising it to sixty-five we can make all those who come in that class affiliate members of our association and perhaps the American Medical Association will make them affiliate members also.

We have had requests of that kind and it is brought through the case of Dr. Andrews, which will probably be voted on this year. The House of Delegates and the American Medical Association must vote on this type of membership.

Honorary in the American Medical Association means foreign guests. Of course the same thing couldn't apply here except that we mean "honorary" outside the state of Minnesota. That is the intent of that word here. The word "Associate" takes in the group of men who are not in the practice of medicine, like teachers, missionaries, or anybody else who is alive to any of the sciences applying to the practice of medicine but who is not practising.

PRESIDENT WRIGHT: Any discussion on this amendment?

DR. C. L. SCOFIELD (Benson): That doesn't change our twenty-five year provision?

SECRETARY MEYERDING: No.

DR. H. M. WORKMAN (Tracy): In the By-laws is there anything about sixty-five years of age? That is, in the Constitution?

PRESIDENT WRIGHT: We have to wait a year before this can be completed.

DR. H. M. WORKMAN: The By-laws can be completed today but not as suggested by Dr. Meyerding.

DR. W. F. BRAASCH: What action have you taken on Dr. Andrews?

SECRETARY MEYERDING: Dr. Andrews will be an Affiliate member and he will probably be a member of the American Medical Association today or tomorrow. Dr. James will just be an Affiliate member.

We will correct those already in our list. Now, we have a good many we don't know what to do with. They don't come under classification. This way we can probably fix them up.

The motion was put to a vote and carried.

DR. W. F. BRAASCH: The next proposed amendment to the By-laws in Chapter 8, Section 4, will read as follows: "The Editing and Publishing Committee

shall consist of five members appointed serially by the council. Each shall hold office for a period of five years." This amendment becomes effective January 1, 1929.

I move the adoption of this amendment.

The motion was seconded, was put to a vote and carried.

DR. W. F. BRAASCH: The next amendment to the By-laws, Chapter 9, Section 1, will be amended to read as follows: "The President may at his discretion, with the approval of the Council, increase the number of members of any committee."

I move its adoption.

DR. H. M. WORKMAN: I second the motion.

The motion was put to a vote and carried.

DR. W. F. BRAASCH: Proposed amendment to the By-laws, Chapter 8, under the duties of the Council add Section 13.

Dr. Braasch read the amendment.

By-Laws. Chapter VIII, under the duties of the Council add Section 13: The Council shall be empowered to invest and reinvest such monies as may be available from time to time for the creation and building up of a reserve or sinking fund. A three-fourths vote of the Council shall be necessary to authorize expenditures from this fund other than for investment and reinvestment. It may at its discretion engage the services of a Trust Company to assist in the investment and reinvestment of this fund.

DR. W. F. BRAASCH: I move its adoption.

DR. O. T. SHERPING: I second the motion.

PRESIDENT WRIGHT: Are there any remarks? I will say that that amendment simply legalizes something we have been doing right along. We should invest the money and take care of it. That simply gives them authority for that function.

The motion was put to a vote and carried.

PRESIDENT WRIGHT: We will now have the report of the Credentials Committee.

DR. F. A. ERB (Minneapolis): Everybody is all right and the Credentials are all right. We haven't kept a record this afternoon but the credentials are all right.

PRESIDENT WRIGHT: The next thing on the order of business is the election of officers and we will proceed to the nominations for President.

DR. F. A. ERB (Minneapolis): I wish to place in nomination for president the name of a man who is very well known to all of us. You have known him in the capacity of teacher for the past thirty years. He was very instrumental in putting over our Basic Science Law. I think he was a right hand man to our friend Herman. He was also very instrumental in bringing the American Medical Association to Minneapolis.

These are just a few of the things in which this man has been showing his interest and efforts, and I think he is entitled to the honor of president. This man is Dr. J. T. Christison of St. Paul.

DR. F. H. MAGNEY (Duluth): I second the motion.

DR. P. L. HALENECK (St. Cloud): I wish to say that we all know what he has done for the Association.

You know what he has done for the University of Minnesota.

In spite of that fact we have had but two presidents in sixty years; we have had but one president in the last forty years; we have had no president for the last twenty years. We feel that a man like Dr. Christison should be supported and elected. (Applause.)

PRESIDENT WRIGHT: Are there additional nominations?

DR. C. L. SCOFIELD (Benson): There being but one nomination I move the rules be suspended and the Secretary cast the vote of the House of Delegates for Dr. Christison for president.

DR. E. T. SANDERSON (Minneota): I second the motion.

The motion was put to a vote and carried.

Secretary Meyerding cast the ballot for Dr. Christison.

PRESIDENT WRIGHT: Is Dr. J. T. Christison here?

We will proceed to the ballot on Vice Presidents. There are two Vice Presidents, First and Second Vice President, and I will entertain nominations for the First Vice President.

DR. W. A. COVENTRY (Duluth): I would like to place in nomination the name of Dr. Liedloff, who is now Second Vice President, advancing him to First Vice President.

The motion was seconded.

PRESIDENT WRIGHT: Are there any other nominations? I will entertain a motion to close the poll.

DR. H. M. WORKMAN: I move that the nominations be closed and that the Secretary be instructed to cast the ballot.

The motion was seconded, was put to a vote and carried.

Secretary Meyerding cast the unanimous ballot.

PRESIDENT WRIGHT: The next officer to be balloted on is the Second Vice President.

DR. O. T. SHERPING (Fergus Falls): I nominate Dr. C. O. Estrem.

The motion was seconded.

DR. W. A. COVENTRY: I move the nominations be closed and the Secretary be instructed to cast the ballot.

The motion was seconded, was put to a vote and carried.

Secretary Meyerding cast the unanimous ballot.

PRESIDENT WRIGHT: The next officer to be elected is the Secretary. Do I hear a nomination for Secretary?

DR. C. L. SCOFIELD: I move that the President cast the ballot for Dr. E. A. Meyerding.

The motion was seconded, was put to a vote and carried.

PRESIDENT WRIGHT: The next office to be balloted on is the Treasurer. Are there any nominations for Treasurer?

DR. G. S. WATTAM (Warren): I nominate Dr. Hare for Treasurer.

The motion was seconded.

PRESIDENT WRIGHT: Are there any other nominations?

DR. A. G. MOFFAT (Howard Lake): I move that the nominations be closed and the Secretary be instructed to cast the ballot.

The motion was seconded, was put to a vote and carried.

Secretary Meyerding cast the unanimous ballot.

PRESIDENT WRIGHT: Our Councilor, Dr. Workman, has retired and what do you wish to do about it?

DR. C. L. SCOFIELD: Mr. President, I place Dr. Workman in nomination.

The motion was seconded.

DR. A. G. MOFFAT: I move the nominations be closed and the Secretary instructed to cast the ballot.

The motion was seconded, was put to a vote and carried.

Secretary Meyerding cast the unanimous ballot.

PRESIDENT WRIGHT: In the Fifth District Dr. Savage's term has expired.

DR. G. A. EARL: Coming from that district, I think I can voice the sentiment that Dr. Savage be continued as Councilor in the Fifth District.

The motion was seconded.

PRESIDENT WRIGHT: Any additional nominations?

DR. A. G. MOFFAT: I move the nominations be closed and the Secretary instructed to cast the ballot.

The motion was seconded, was put to a vote and carried.

Secretary Meyerding cast the unanimous ballot.

PRESIDENT WRIGHT: In the Seventh District Dr. Will's term expires. We will entertain nominations for that office.

DR. W. A. COVENTRY: I would like to place the name of Dr. W. W. Will in nomination for Councilor in the Seventh District.

DR. H. M. WORKMAN: I second the motion.

DR. A. G. MOFFAT: I move the nominations be closed and the Secretary be instructed to cast the ballot.

The motion was seconded, was put to a vote and carried.

Secretary Meyerding cast the unanimous ballot.

PRESIDENT WRIGHT: We will proceed with the election of two delegates to the American Medical Association. As you know, the new Constitution provides that the Council shall act as a Nominating Committee. However, I feel sure that the Council would like to have nominations from the floor if the members so desire. It is simply an expression of opinion on the part of the Council and if there are additional nominations we will be very glad to entertain them.

Dr. H. M. Workman read the report on the Nominating Committee.

#### REPORT OF NOMINATING COMMITTEE

Motion made by Dr. Savage, seconded, that the Council recommend Dr. H. M. Johnson and Dr. W. F. Braasch as Delegates to the American Medical Association and Dr. B. S. Adams and Dr. O. J. Hagen as their Alternates. This motion was amended to read, "Dr. H. M. Johnson, Delegate, Dr. B. S. Adams, as

his Alternate. Dr. W. F. Braasch, Delegate, Dr. O. J. Hagen, as his Alternate." Carried.

DR. H. M. WORKMAN: I move the adoption of this report.

The motion was seconded.

DR. A. G. MOFFAT: I move the nominations be closed and the Secretary cast the ballot for the nominees.

The motion was seconded, was put to a vote and carried.

Secretary Meyerding cast the unanimous ballot for the nominees.

PRESIDENT WRIGHT: I have here an item of unfinished business. Is there any unfinished business of any kind?

The next item that I have on this list is to appoint a committee to present President-elect Christison tonight. I should like to ask Dr. Boyer and Dr. Coventry to present the new President-elect to the House of Delegates at the dinner tonight.

DR. J. M. ARMSTRONG: I just tried to locate Dr. Christison. He was at the Nicollet Hotel attending the reception for the delegates but they have gone. He was paged there but we couldn't locate him. He has gone to the Auditorium and they don't page anybody there. However, this committee will see that he is at the dinner tonight.

PRESIDENT WRIGHT: The next thing to decide is the time and place of the next meeting.

DR. WILLIAM BLACK (Mankato): It has been the custom for the past several years to have the meetings in the Twin Cities and Duluth. The people in the smaller cities feel it would do the city of Mankato good to go there. For that reason and because of good hotel facilities it is an excellent place for a meeting. We should like to extend an invitation to the society to meet in Mankato in 1929.

I should be glad to hear from Dr. Andrews.

DR. ANDREWS: Mr. President, Ladies and Gentlemen: I am not a delegate, but if I have the right to the floor I want to emphasize what Dr. Black has just said.

We want you at Mankato next year and we will promise to entertain you real well. We have ample hotel accommodations, and we have tentatively secured the Teachers' State College for the meeting place, which will answer admirably every purpose. There are two large auditorium rooms and rooms for committee meetings. The House of Delegates and any number of committees can meet at the same time under the same roof.

We have a very beautiful city. We have fine golf grounds within a half-mile from the city limits. If the House of Delegates will decide to meet in Mankato next year we will give you every opportunity for a splendid meeting. We have not had the State Society for twenty or twenty-five years, and we have grown some since then.

We have fine artesian wells and we have no bootleggers, so it will be a good place to meet. (Applause.)

DR. H. M. WORKMAN: I would like to ask Dr. Andrews whether they are as close to the Candian line as they were the last time we met at Mankato?

DR. ANDREWS: I will answer that in the affirmative.

DR. W. H. HENGSTLER: It is the desire of the St. Paul Ramsey delegation that we extend to the House of Delegates an invitation to come to St. Paul for the 1929 meeting. I wish at this time to extend that invitation, but wish to state also that we don't want to issue that invitation if the spirit of the delegates is for Mankato. We want the House of Delegates to realize that they have the invitation from St. Paul; that the profession of St. Paul will welcome the meeting if you elect to come there. If you elect to go to Mankato we are wholehearted in our desire to support that city.

We wish to place the invitation before the House of Delegates and let them select as they see fit.

PRESIDENT WRIGHT: Are there any further invitations?

The thing to do here is to proceed to ballot on these two cities, so I will ask the Secretary to prepare ballots. We will want two tellers, and I will ask Dr. Burnap and Dr. Moffat to act as tellers for this vote.

Only the delegates and the Council may vote.

While we are taking this ballot may I take this opportunity to say a parting word to this body of delegates. I hope I will continue to have the same splendid coöperation and support until the first of next January. I sincerely hope you will give our President-elect the same type of support and better if you can, because we want this organization to get better all the time.

You have made an excellent selection for President, a man for whom we all have the greatest respect and affection.

I would like to say to you men as delegates, that your responsibility does not cease when this meeting is over. You have sat here all day and listened, in my opinion, to a lot of very interesting and valuable suggestions and reports. I believe it is your duty when you go back to your local society to call a meeting not six months from now as often happens, but see that your local society has a meeting within a reasonable length of time and put before it a report of this meeting. I think that is one of the ways we can stimulate our organization.

We had two meetings last winter in St. Paul, a meeting of the secretaries and a meeting of the chairmen of public health committees. We went down to a society in the southern part of the state, and at this meeting just a few days ago their representative presented his report to this society, three months afterwards.

I want to thank you one and all, and I want to particularly congratulate the committees on their reports. They were excellent reports. I thank you from the bottom of my heart for the honor of being your president. (Applause.)

Are the tellers ready to report on this vote?

DR. W. L. BURNAP: There were fifty-one votes cast, of which thirty-six are for Mankato and fifteen for St. Paul.

DR. WILLIAM BLACK (Mankato): I move that the time of the meeting be set by the Council, and to say that Mankato will entertain you and the latchkey will be out.

DR. A. G. MOFFAT: I will second the motion.

PRESIDENT WRIGHT: Any remarks?

The motion was put to a vote and carried.

PRESIDENT WRIGHT: As far as I know I believe a motion to adjourn is in order.

Upon motion regularly made, seconded and carried, the meeting adjourned.

The meeting adjourned at four forty-five o'clock.

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# MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

## EXAMINATION REPORT, JUNE, 1928.

### BY EXAMINATION

NAME	SCHOOL AND DATE OF GRADUATION	ADDRESS
Alexander, Fay Knight	Univ. of Minn., M.B. 1928.	401 10th Ave. S.E., Rochester, Minnesota
Beiswanger, Richard H.	Univ. of Minn., M.B. 1928.	Mpls. Gen. Hosp., Minneapolis, Minnesota.
Berke, Raynold N.	Univ. of Minn., M.B. 1928.	1773 W. Minnehaha, St. Paul, Minnesota
Bradford, Carl William	Marquette, M.D. 1928.	St. Joseph's Hospital, St. Paul, Minnesota
Browe, Evelyn Lillian	Univ. of Minn., M.B. 1927.	2649 Johnson St. N.E., Minneapolis, Minnesota
Brownstone, Manuel	U. of Manitoba, M.D. 1928.	St. Mary's Hospital, Minneapolis, Minnesota
Bruenner, Bertram	Univ. of Minn., M.B. 1928.	304 S. Brimhall Ave., St. Paul, Minnesota
Cameron, Isabell Logan	Boston Univ., M.D. 1918.	346 Penn Ave. N., Minneapolis, Minnesota
Claydon, Donald Robert	U. of Louisville, M.D. 1926.	Medical Block Clinic, Red Wing, Minnesota
Clothier, Elton Forrest	Univ. of Minn., M.B. 1928.	3431 Chicago Ave., Minneapolis, Minnesota
Cohen, Sumner S.	Univ. of Minn., M.B. and M.D. 1928.	General Hospital, Minneapolis, Minnesota
Curran, Frank Joseph	Univ. of Minn., M.B. 1928.	2200 Cedar Ave., Minneapolis, Minnesota
Davee, Chalmer	Univ. of Minn., M.B. 1928.	603 Delaware S.E., Minneapolis, Minnesota
Davenport, LaMar Hay	Univ. of Pa., M.D. 1926.	Mayo Clinic, Rochester, Minnesota
Donald, Joseph Marion	Tulane Univ., M.D. 1925.	Mayo Clinic, Rochester, Minnesota
Drenckhahn, Charles Hilbert	Univ. of Minn., M.B. 1928.	329 Union St. S.E., Minneapolis, Minnesota
Edwards, Gordon C.	U. of Manitoba, M.D. 1928.	2122 Lyndale Ave S., Minneapolis, Minnesota
Elkins, Alfred John	U. of Minn., M.B. 1927, M.D. 1928.	3350 N. Knox Ave., Minneapolis, Minnesota
Emond, Albert Joseph	Univ. of Minn., M.B. 1928.	Miller Hospital, St. Paul, Minnesota
Fallon, Madeleine Ann	Univ. of Minn., M.B. 1927.	University Hospital, Minneapolis, Minnesota
Fetter, Ferdinand	Univ. of Minn., M.B. 1928.	1043 Lincoln Ave., St. Paul, Minnesota
Flanagan, Leonard Gervais	Univ. of Minn., M.B. 1928.	603 Delaware S.E., Minneapolis, Minnesota
Folta, John	Univ. of Minn., M.B. 1928.	2118 5th St. So., Minneapolis, Minnesota
Fortney, Arthur C.	Wash. U., Mo., M.D., 1927.	Miller Hospital, St. Paul, Minnesota
Fransco, Peter P.	Creighton U., M.D. 1927.	Ivanhoe, Minnesota
Gilman, Abe Arthur	Univ. of Minn., M.B. 1928.	1141 Thomas Ave. N., Minneapolis, Minnesota
Hagerty, Warren T.	Marquette, M.D. 1928.	St. Joseph's Hospital, St. Paul, Minnesota
Hansen, Cyrus Owen	Univ. of Minn., M.B. 1928.	306 Park Ave., Bismarck, North Dakota
Hesdorffer, Meredith Benjamin	Univ. of Minn., M.B. and M.D. 1928.	500 Delaware St. S.E., Minneapolis, Minnesota
Hill, Frederick Charles	Columbia U., M.D. 1925.	206 6th St. S.W., Rochester, Minnesota
Hiniker, Peter Joseph	Univ. of Minn., M.B. 1927.	St. Joseph's Hospital, St. Paul, Minnesota
Howard, Laura Koon	Univ. of Minn., M.B. 1927.	3239 Portland Ave., Minneapolis, Minnesota
Johnson, Andrew Richard	Univ. of Minn., M.B. 1928.	1081 Hague Ave., St. Paul, Minnesota
Karlins, Walter Howard	U. of Minn., M.B. 1927, M.D. 1928.	704 15th Ave. S.E., Minneapolis, Minnesota
Keegan, Agnes Marie	U. of Minn., M.B. 1927, M.D. 1928.	Mpls. Gen. Hospital, Minneapolis, Minnesota
Kelby, Gjert M.	Northwestern, M.D. 1928.	707 Phys. and Surg. Bldg., Minneapolis, Minnesota
Keyes, John Dwight	Univ. of Minn., M.B. 1928.	510 Essex St. S.E., Minneapolis, Minnesota
Kumm, Frederick F.	Univ. of Minn., M.B. and M.D. 1924.	400 9th St. S.E., Minneapolis, Minnesota
Laugeson, Lyder L.	Univ. of Minn., M.B. 1928.	2526 E. Franklin Ave., Minneapolis, Minnesota
Liffrig, William W.	Northwestern, M.D., 1928.	Goodhue, Minnesota
Lippman, Emanuel S.	Univ. of Minn., M.B. 1928.	109 Highland Ave., Minneapolis, Minnesota
Lipschultz, Oscar	Univ. of Minn., M.B. 1928.	78 E. Dearborn St., St. Paul, Minnesota
Litman, Abraham B.	Univ. of Minn., M.B. 1928.	St. Mary's Hospital, Minneapolis, Minnesota
McBride, Wm. Percy Leon	Med. Coll. of Va., M.D. 1926.	202 11th Ave. N.E., Rochester, Minnesota
Madland, Robert Seymour	Univ. of Minn., M.B. 1928.	655 Gotzian St., St. Paul, Minnesota.
Mead, Charles Henry, Jr.	Univ. of Minn., M.B. and M.D. 1928.	515 Delaware S.E., Minneapolis, Minnesota
Miller, Hugo Eugene	Univ. of Minn., M.B. and M.D. 1928.	316 17th Ave. S.E., Minneapolis, Minnesota
Moen, Johannes K., Jr.	U. of Minn., M.B. 1927, M.D. 1928.	3147 Cedar Ave., Minneapolis, Minnesota
Naegeli, Arnold Edward	Marquette, M.D. 1928.	St. Joseph's Hospital, St. Paul, Minnesota
Nelson, John Miller	Univ. of Minn., M.B. 1928.	1515 Charles St., St. Paul, Minnesota
Nelson, Kenneth Roy	Univ. of Minn., M.B. 1928.	2119 Humboldt So., Minneapolis, Minnesota
Nethercott, Ernest Gilbert	Univ. of Minn., M.B. 1928.	233 Kent Road, Duluth, Minnesota
Norman, Erwin Louis V.	U. of Minn., M.B. 1927, M.D. 1928.	U. S. Naval Hospital, Chelsea, Massachusetts
Ormond, Douglas Thomas	St. Louis U., M.D. 1927.	Correll, Minnesota
Palmer, Carroll Edwards	Univ. of Minn., M.B. and M.D. 1928.	329 Union St. S.E., Minneapolis, Minnesota
Prescott, Manfred U.	Univ. of Ill., M.D. 1923.	Mayo Clinic, Rochester, Minnesota
Puestow, Charles Bernard	Univ. of Pa., M.D. 1925.	Mayo Clinic, Rochester, Minnesota
Richardson, Russell B.	U. of Minn., M.B. 1927, M.D. 1928.	Waconia, Minnesota
Rosekrans, Milton Charles	Univ. of Minn., M.B. 1928.	New Asbury Hospital, Minneapolis, Minnesota
Schimelpfenig, Geo. Theo.	Univ. of Minn., M.B. 1928.	3324 18th Ave. So., Minneapolis, Minnesota
Schoofs, Gregor Elmer	Univ. of Minn., M.B. and M.D. 1927.	916 E. 15th St., Minneapolis, Minnesota
Schottler, Max Elliott	Univ. of Minn., M.B. 1928.	Dexter, Minnesota
Seth, Raymond Ephraim	Univ. of Minn., M.B. 1928.	2840 W. River Road, Minneapolis, Minnesota
Strand, Elwyn Vincent	Univ. of Minn., M.B. 1928.	Marine-on-St. Croix, Minnesota
Vaccaro, Francis J.	St. Louis U., M.D. 1927.	St. Mary's Hospital, Minneapolis, Minnesota
Waldron, George W.	Univ. of Minn., M.B. 1928.	429 Union St. S.E., Minneapolis, Minnesota
Watkins, Charles Hamilton	Univ. of Minn., M.B. and M.D., 1928.	University Hosital, Minneapolis, Minnesota
White, John Huffman	Univ. of Ore., M.D. 1926.	Mayo Clinic, Rochester, Minnesota
Wiechman, Frederick	Univ. of Minn., M.B. 1928.	Freeport, Minnesota
Wigby, Palmer E.	Univ. of Minn., M.B. 1927.	General Hospital, Minneapolis, Minnesota

## BY RECIPROCITY

Goforth, Clifford.....	St. Louis Univ., M.D. 1926.....	State Hospital, St. Peter, Minnesota
Hunt, Henry Franklin.....	Vanderbilt U., M.D. 1924.....	F-6 College Apt., Rochester, Minnesota
Lokke, Benjamin Richard.....	Rush, M.D. 1922.....	Egan, South Dakota
Mroz, Rudolph John.....	Univ. of Ill., M.D. 1922.....	Mayo Clinic, Rochester, Minnesota
Mitchell, Edward C.....	Col. of Med. Evangelists, M.D. 1925.....	Wayzata, Minnesota
Rapp, Edwin Wallace.....	Rush, M.D. 1919.....	1126 Lill Ave., Chicago, Illinois

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# MINNESOTA MEDICINE

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## THE SINGLE TRACK MIND

ARTHUR SWEENEY, M.D.

*Saint Paul*

IT is a fact, common in the experience of most psychiatrists, that many men, successful in their occupations beyond the ordinary, tend to break down mentally between fifty and sixty years of age. While up to the sixth decade of life, they are active mentally and physically, in splendid bodily health, enjoying financial success that excites the envy of their fellows, and apparently possessed of everything to make them happy, they slow up mentally in their work, lack interest in their business, become discontented and introspective, and gradually develop melancholia with delusions of poverty. A very successful doctor, who united professional skill with a rather morbid passion for acquiring money, asked a friend if a half million would be enough to ensure that he would never starve to death? He had reached the sixth decade of life, and in spite of his wealth and professional success, had developed the characteristic delusions of poverty—the mark of the single track mind. A man of business, with several millions in bonds and other investments, long entertained the fear that he would die in the poorhouse. A man of great wealth regretted that he could not afford a new pair of shoes, nor to go to a sanitarium. I could cite dozens of instances in which, after the acquisition of millions, the delusion of poverty has been a concluding phase of the careers.

The reason is not far to seek. These individuals are the unfortunate possessors of a single track mind. A study of their life history and character shows that during adolescence they were free from the follies and vices that accompany that period of life. They neither drank nor smoked. Dancing and cards had no allurements for them. Novels and all imaginative literature they abhorred. Sports did not attract them, and they sowed no wild oats. They were very correct in their behavior, serious minded, fond of

wise maxims about industry, honesty and thrift, and while their youthful companions were spending their earnings without thought of the rainy day, they weekly visited the savings bank with a large share of their wages. They were model boys, free from vicious habits, industrious and wise beyond their years, and looking with sedulous care upon the years to come when they might enjoy the fruits of their industry and foresight. Gradually acquiring capital they lent it out at the highest rate of interest consistent with good security, invested with uncanny wisdom in ventures that were extremely profitable, and as the years followed one another they were pointed out as the "men who made good" in their neighborhood. Financial success made them the objects of envy of the less fortunate. They are the prominent bankers, business men, owners of real estate or wealthy capitalists, whose lives are pointed out to heedless youth as models to follow.

But in the sixth decade of life comes the crash. Their massive achievements are as nothing to them. They become depressed. They take little interest in life. Family pleasures do not allure them. They can see no sense in the happy optimism of those about them. They cannot mix with their fellows in the ordinary pleasures of life. The drama, music and art are outside of their powers of comprehension. They do not know one playing card from another. Smoking is a vice, and a highball does not awake them from their melancholy moods. All things bore them. Even business, which absorbed all their thoughts and in which they took the keenest delight, no longer furnishes them with satisfaction or happiness. The edifice of wealth on which they have squandered the hopes of youth, the industry of middle life and the hard labor of their more mature years, now seems to them

to be lacking in the capacity to produce happiness. The ambitions of youth, like Dead Sea apples, have turned to ashes on their lips.

Then fear enters their souls. With their energies, burnt out by their lifelong endeavors, their capacity for happiness atrophied by long disuse, they look to the future with apprehension. They lose their sense of proportion. Realizing the instability of all accumulations of money, they fear lest disaster overtake them. They see losses in every transaction, however profitable. They are afraid to continue in the game of business and yet dare not let go of it. The fear of poverty enters their souls, and the rest of their lives is spent with the brooding shadow of the poorhouse constantly over their heads.

Man is a many sided animal. In his period of growth, habit forms psychological tracks in which his activities manifest themselves. These pathways, at first with difficulty established, become channels of least resistance through which his ideas express themselves. The more of these pathways there are in the brain, the greater the number of association contacts there are, the more intelligently does the man express himself, and the more harmoniously the delicate adjustments of thought and action manifest themselves. The more of these association tracks there are the more versatile is the man and the greater his adaptation to environment. The smaller the number of these pathways, the more limited is a man in expression of his desires and abilities. The larger the number of his association contacts, the more nearly in touch is he with his surroundings, and the greater is the number of appeals to sensation and feeling that give him happiness. Such a man can respond to the allurements of art, poetry, music and literature. His emotions have a wide sphere in which to display themselves. His mind is as a harp on which many seductive tunes may be played. He is responsive to all pleasing sensations that come from without, and the more complete is his capacity for happiness.

The unfortunate one whose habit pathways are few in number, whose intellectual powers are confined to few problems, and whose emotions are lacking in means of expression, plays always the same tune. His interest in his environment is limited; his few desires absorb all his energy. His capacity for happiness is of the smallest. His whole mind is concentrated on one purpose,

and all extraneous things, however attractive to others, make no appeal to him. He is constitutionally defective in emotional development. While his talents may lead him to great heights in his line of endeavor, all things else are of no importance compared with his great objective.

Once his objective is attained, there is no stimulus to further effort. His work is done, and there is no other outlet for his ambition. His idleness irks him. He realizes the instability of the edifice he has erected, and he fears that it may crumble as others have done. He has run on a single track during the greater part of his life. There have been no side-tracks that led to pleasant places, no branch lines whereby he might divert himself. He has forged ahead steadily to the end of the line, and there he stops. He cannot retrace his steps and he cannot go further. All the vigorous purpose of his life seems vain, and the success for which he has so ruthlessly sacrificed the pleasures of youth, the enthusiasms of middle life, and the ardent labor of full maturity, fails to bring him anything of happiness.

It is at the sixth decade of life that this transformation takes place. Between fifty and sixty is the perilous period for the man with the single track mind, and as long as he lives he is never free from the delusions of poverty. The less serious minded companions of his youth, unsuccessful financially and less honored and acclaimed, appear to be happy in their mediocre position in life. They can indulge themselves in simple pleasures, and seem to have no fears of the future, for they have developed along normal lines in keeping with the decades of life. Folly is as natural in the second decade as is wisdom in the sixth. One cannot safely reverse this process of nature.

Play is as necessary as work. It keeps the mind and body in proper adjustment. It gives exercise to the imagination and to the healthy emotions. It harmonizes the conflicts of good and bad fortune, and brings one in proper touch with one's environment. The possession of a few gentlemanly vices is an asset not to be despised. Man is an instrument on which many tunes may be played, and unfortunate is the one who knows only one tune. He himself becomes weary of its monotony at the sixth decade, for it sings to him only of the delusion of poverty and the shadow of the poorhouse.

## FUNCTIONAL DYSPEPSIA\*

D. MORRISON MASSON, M.D.  
*Rochester, Minnesota*

MOST physicians are daily brought in contact with patients complaining of stomach trouble, usually without any evidence of organic disease. The intimate relationship between the nervous system and the digestive tract permits profound disturbance in the function of the latter as a result of nervous influences. Such disturbance may closely simulate severe organic trouble and all the reserves at the command of the physician may be taxed in the making of an accurate diagnosis. The history is of extreme importance and an accurate analysis of the patient's complaint may give suggestive information. Careful inquiry into the personal history may elicit pertinent facts that bear a definite relationship to the complaint. An estimate must be made of the nervous and emotional reactions and it may be necessary to inquire into most intimate matters. The various laboratory methods of examination now at our command furnish us with ready means for determining the presence or absence of organic trouble. The perfection of the technic of making roentgenograms of the stomach, duodenum, colon, and more recently the gallbladder has afforded means for accurate diagnosis in an almost unbelievably high percentage of cases, and thus we learn of the essential factors in the history that are likely to point to organic trouble. The accuracy of diagnosis is unquestionably higher throughout the country even in the absence of opportunity for laboratory investigation than it was a few years ago. We may now check our impressions and we have a much clearer conception than formerly of the symptoms of many diseases.

### CHRONIC CONSTIPATION

Among the most common causes of functional stomach trouble is chronic constipation; its prevalence needs no emphasis. Constipation means not only that the bowel fails to move, but that there is a progressive disturbance of the whole digestive tract. The coated tongue is only an expression of the disturbed function of the mu-

cous membrane throughout the tract. The digestive glands are so affected in turn, and the laity's conception of the complaint as liver trouble, torpid liver, and so forth is, in part at least, not far from the mark. If, as is usual in such cases, cathartics, often in drastic doses, are used habitually, there is ample cause for disturbances of digestion. Spastic constipation develops, the result of the many remedies with which the patient, often following his physician's prescriptions, has sought to cure.

The history may date back many years, the symptoms lacking the typical periodicity so often noted in peptic ulcer. Hyperacidity is usually marked, and this may give symptoms suggestive of ulcer, that is, distress when the stomach is empty and relief after the taking of food. As a rule there is distress after eating with bloating and belching. Some of the features may strongly suggest chronic disease of the gallbladder, a mild form of which may conceivably be present in many cases.

The patient is often poorly advised as to diet. He becomes convinced that many kinds of food disagree with him and eventually adopts a diet low in residue, with consequent aggravation of constipation and persistence of dyspepsia. The patient becomes convinced that he has some serious organic trouble, ulcers or cancer, and the worry of this still further disturbs function. The reassurance of a thorough examination, together with laboratory investigations, roentgen-ray studies, and so forth, goes a long way toward dissipating the neurosis that has been built up over months or years of worry. The patient should then be urged to follow a general diet with ample roughage and instructed in regard to regularity of habits, of drinking water, and so forth.

It is particularly difficult to exclude organic trouble if patients are at or past middle age, and are complaining of indefinite stomach trouble manifested by distress after eating, anorexia or failure to eat because of the fear of distress. In consequence they lose weight, often markedly, and sometimes there is secondary anemia, vague

\*From the Division of Medicine, The Mayo Clinic, Rochester, Minnesota. Read before the Wabasha County Medical Society, Plainview, Minnesota, July 5, 1928.

epigastric or general discomfort, or pain and belching. Constipation is common in these cases. The diet is usually restricted and there may be hyperchlorhydria or achlorhydria. Examinations may be entirely negative. A careful history should include all the details of the complaint and malignancy may well be suspected from the general condition, the age, loss of weight, and anemia. Lacking confirmation of such a suspicion by a complete roentgen-ray study of the digestive tract, it is conceivable that the disorder may be purely functional. The element of time is significant and the patient should not be too readily reassured without the opportunity of a thorough reexamination at the end of a few weeks or months. The history should be carefully reviewed with regard to possible causes for such a functional upset. Worry over domestic or financial affairs and over health is not infrequently the cause for such upsets. The knowledge that some friend or relative died of cancer may impress itself on the patient's mind and serve to perpetuate and aggravate a complaint that started with a minor disorder of no real significance. Correction of constipation and the stressing of a more liberal diet may result in satisfactory improvement. The reassurance one is able to give after the various roentgen-ray studies have failed to reveal any serious lesion may in itself be instrumental in dissipating the chief cause of the upset, worry arising from the patient's conviction that he has some serious trouble. It is my impression that error is most frequently made in these cases in unwisely restricting the diet, often without adequate reason. This increases the constipation as a rule and may lead to progressive weakness and loss of weight which can readily be remedied by starting the patient on a full general diet with an adequate amount of roughage. It has been my opportunity to see many such patients who for months had been living on a too restricted diet, having been enjoined to abstain from many of the articles of food that go to make up a well-balanced diet, show marked improvement in the general condition after they had been reassured and urged to eat everything they wanted, using ordinary discretion in avoiding things that did not agree with them. Diet slips often prove wholly inadequate; there are very few diseases besides diabetes and nephritis in which the diet must be rigidly chosen by the physician.

#### FUNCTIONAL ELEMENT

The significant functional element that exists in many cases of true organic trouble should not be overlooked. Peptic ulcer seems to be typical among patients who are more or less nervously high-strung, full of energy and leading a strenuous existence. Whether or not the hyperacidity so often associated with these factors is in itself a cause of ulcer is a moot question. At least it seems to be a very important factor in the ulcer syndrome. The periodic incidence of the ulcer attacks concomitant with nervous stress is common knowledge. One patient told how attacks more severe than usual followed the worry and sleepless nights occasioned by his baby's having to be operated on for acute mastoiditis. Another patient, a lawyer, experienced a marked exacerbation of ulcer symptoms along with the nervous strain of preparing a case for the courts. This functional element readily explains why many such patients require a rather rigid dietary regimen for control of symptoms while they are attending to the exacting demands of their calling, yet when all tension is relieved they may exist comfortably on a general and liberal diet with disruption of the regular regimen incident to a hunting or fishing trip.

The functional element no doubt explains many of the unsatisfactory results following surgery for ulcer, and a proper understanding of this should permit more careful selection of cases for surgery. In the absence of complications and in the presence of a marked nervous element related to symptoms, patients should not be rushed to operation without having been given a thorough trial of medical management. Patients must be impressed with the importance of avoiding extremes of worry and nervous excitement and they must learn to develop self-discipline and equanimity so that they may carry on without expending too much nervous energy. If eventually surgery is advisable, this factor should still be stressed, thus enhancing the chances of a good surgical result.

Patients suffering from gastric ulcer often smoke excessively, particularly cigarettes. This is an expression of a nervous temperament and in itself contributes to the nervousness, which no doubt aggravates the symptoms by increasing the hyperacidity. Refraining from all smoking except after meals often proves very helpful.

The spread of medical knowledge among the laity has increased largely in the last few decades. Public health propaganda, the various health magazines and the health columns in many of the daily newspapers serve to bring before the public the subject of health, which never fails to evoke interest. It is possible in this regard that "a little learning is a dangerous thing." Without the background on which to form judgments, many of even the most intelligent citizens gain a weird idea of the message that is presented and they are sometimes left with many worries never even thought of before. Many persons are led to worry over some minor complaint merely because the possibility has been presented to them. Periodic examinations, while productive of much benefit, are not without disadvantages, since they leave in their wake many confirmed neurotics who had been much happier had they never felt obliged to consult a physician.

In many cases the diagnosis can be made from the history alone, since the symptoms may in no way suggest an organic lesion. It has been well said, however, that the more physicians the patient has seen, the more closely may his symptoms fall in line with an ulcer history. This merely follows on the facility with which many of these patients, after a number of questionings, will adopt the symptoms they feel they are supposed to possess.

#### OCCUPATION

A somewhat common cause for dyspepsia is employment in smelters, garages, and so forth, where workers are exposed to noxious gases. Carbon monoxide is often the main toxic agent. The chronic poisoning with which these patients suffer often causes symptoms of gastro-intestinal disturbances, headache, anorexia, marked hyperacidity, and distress after eating, with gas and belching. Such cases are often overlooked. The occupation of the patient, so often passed by in taking the history, here may be the key to the explanation of the complaint. Naturally most of these cases occur in the winter months when in many of the smaller garages ventilation is at a premium, and all doors are closed to keep out the cold. The patients usually experience prompt relief when the cause is removed. A change of occupation, the securing of out-of-door work, is often advisable.

#### REFLEX DISTURBANCE

Reflex disturbance of the stomach must receive some consideration, although its place is perhaps more correctly included in a discussion of the various conditions responsible rather than of functional dyspepsia. The stomach is often the alarm signal for trouble anywhere in the abdomen. Inflammatory conditions of the appendix, the gallbladder, the prostate and seminal vesicles and the uterus and its adnexa may be the cause of an upset stomach. The importance of thorough history taking and general examination must be stressed. Many grave errors of judgment are the result of inadequate data, and the careful physician will not content himself with a cursory inquiry into the symptoms of his patient.

#### MIGRAINE

Migraine and its equivalents should also be included in the inquiry, since patients suffering from profound nausea and vomiting have directed too much attention to the gastric upset and not enough to the underlying syndrome. Migraine represents a peculiar fundamental nervous constitution with definite hereditary tendencies, whatever may be the actual mechanism. The stage is set, as it were, for headaches or the other disturbances peculiar to the particular case, and any one of a number of factors may be the responsible agent for pulling the trigger. Many unwarranted operations have been performed in the attempt to relieve the symptoms, with results often little short of disastrous. It is true that many patients suffering from migraine have been helped by surgical removal of the gallbladder, but such patients have had dyspepsia which has definitely upset digestion. The same result may be obtained by correction of constipation. The regulation of habits, securing better elimination, freedom from worry, moderation in all things, and the cultivation of a complacent attitude serve to control the migraine even though from its very nature it does not admit of cure.

Migraine may present many variations from the typical syndrome. There may be headache without any gastro-intestinal upset, or severe nausea and vomiting without headache. In order to properly classify the latter, considerable diagnostic acumen may be necessary, together with a consideration of the case history, the family background, and a thorough laboratory investi-

gation. A careful examination from a neurologic standpoint must exclude the crises of tabes.

In a certain group of cases periodic attacks of severe epigastric or general abdominal cramping pain may be associated with vomiting or diarrhea. In the absence of evidence of any organic lesion, and with a definite background of migraine, a diagnosis of abdominal migraine may be made. These patients may duplicate symptoms of angioneurotic edema with gastro-intestinal features, and at least point out a possible mechanism of the migraine attack. Roentgenograms of the gallbladder have been found helpful in this group of cases in excluding cholecystitis with stones as a cause for the severe cramps which may closely simulate gallstone colic. A normally functioning gallbladder is at least fairly good evidence against this possibility.

Often the complaint of dyspepsia is only an expression of a run-down condition, with poor tone to the musculature in general, hypotension, general visceroptosis and a multiplicity of functional complaints referable to every system. Fortunately the various operations designed to hitch up one organ or another are no longer popular. General tonic measures may be productive of satisfactory results. The wearing of an abdominal belt may give good results, not because it holds the "dropped stomach" up in its

normal place, but because by increasing the intra-abdominal pressure, which the poor tone of the muscles fails to accomplish, an improvement in the splanchnic circulation results with consequent benefits to the general circulation.

Many such patients present a poor prognosis from the outset. They lack the physical and psychic stamina to cope with the demands of ordinary existence. As congenital biologic inferiors, they represent a difficult and discouraging problem.

#### COMMENT

In conclusion I would like to stress the importance of functional dyspepsia in the consideration of stomach trouble in general. Too often the patient is left with the idea that he must have organic trouble or nothing, and he carries away the idea that his troubles are supposed to be imaginary, but he knows well they are not. Functional trouble may be productive of symptoms which are much more severe than those of true organic disease; in fact most of the symptoms of organic disease are due to the coincident disturbance of function. An explanation of the mechanism responsible for the upset may prove very helpful to the patient, and secure his confidence in his physician. The consideration of functional factors in the presence of true organic disease is also of importance in the treatment.

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#### BARBITAL AND RELATED HYPNOTICS

Many substitutes for barbitol have been introduced with the claim of greater relative hypnotic action as compared with toxic effects. The toxic action appears to be mainly an intensification of the depression of the central nervous system which in therapeutic doses produces nearly normal sleep; hence their hypnotic activity and their toxicity must run closely parallel, so far as the central nervous system is concerned. An experimental study of a number of hypnotics of the barbitol series on cats showed that none were much more ac-

tively hypnotic in proportion to their toxicity than barbitol. Of the five hypnotics examined, none exerted marked analgesic effects with less than 30 per cent of the average fatal dose. None of the hypnotics produced any uniform change in the heart rate or respiratory rate. From this study one does not gain the impression that any of the substitutes possesses all the advantages and none of the disadvantages of the official barbitol. Probably the actual toxicity for man is nearly proportional to the hypnotic action. (Jour. A. M. A., August 11, 1928, p. 398.)

# SURGICAL TREATMENT OF PHARYNGEAL AND ESOPHAGEAL DIVERTICULA: REPORT OF CASE

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*Minneapolis*

THE first three operations for surgical treatment of pharyngeal and esophageal diverticula were performed by Kunge in 1864, Hamburger in 1871 and by Niehans in 1884. All three patients died operative deaths according to the narrator, William Hill<sup>1</sup> of London. The first successful operation that Hill found reported in the literature was by Wheeler of Dublin in 1886.

One surgical method found in the literature by Hill was a two-stage operation performed by Goldman and also by Halstead, namely, first dissecting free and ligating the sac and then removing it at a later operation.

Wilkey<sup>1</sup> and Hartley<sup>1</sup> removed the mucosa of the diverticular pouch and invaginated the remaining fibrous coat by means of purse string sutures.

Bevan<sup>1</sup> devised a method of obliterating the sac by means of longitudinal and purse string sutures, leaving a small knob of tissue on the gullet.

Dr. William Hill<sup>1</sup> of London, in 1917, reported his diverticulopexy wherein he dissected his sac free, applied a ligature about its neck to prevent the entrance of food and raised the fundus of the sac upward and stitched it into the upper angle of the wound.

J. B. Murphy and C. H. Mayo both<sup>2</sup> employed a two-stage method somewhat similar to that of Goldman and Halstead.

Judd<sup>2</sup> used the infolding operation of Bevan and the two-stage removal of C. H. Mayo in a large series of cases reported by him in 1918.

Gaub and Jackson,<sup>3</sup> in 1915, devised a combined esophagoscopic and surgical method of dealing with these diverticula, reporting at that time two successful cases.

Jackson and Shallow<sup>4</sup> reported a large series of operations in 1926, performed by the Gaub-Jackson method,<sup>3</sup> which is as follows:

(a) Intratracheal ether anesthesia is used. The esophagoscope is inserted and the sac is cleansed by means of a suction tube.

(b) An incision along the anterior border of the sternomastoid muscle is made, reaching from the level of the hyoid bone down to the sternum, cutting through the skin and deep fascia, exposing the omohyoid muscle, which usually must be cut transversely. The external jugular vein may have to be tied and ligated. The common carotid artery and internal jugular vein are retracted outward, and if the thyroid gland is large the superior thyroid artery may have to be ligated, allowing access to the sheath of the esophagus



Fig. 1. Esophageal diverticulum. (Richardson, *Annals of Surgery*.)

and trachea. With this surgical exposure completed, the esophagoscopist transilluminates the sac and raises it into the wound as it is freed from its surrounding tissues, after which it is dealt with like the sac of an ordinary inguinal hernia, namely by means of transfixation, ligation and amputation.

The esophagoscope is kept in the lumen of the esophagus until the sac is removed and three reef sutures are thrown across the site of the amputation. These reinforce the weakened portion of the gullet but do not narrow it because the esophagoscope is left in place while the stitches are being tied. Drainage may or may not be used in the wound.

A Rehfuß tube is placed in the esophagus for feeding the patient until the esophageal wound heals.

The following is a case report of a patient operated upon by the Gaub-Jackson method:<sup>3</sup>

J. E. S. Male. Age 75.

Complaint: pain in the epigastrium, nausea, vomiting, loss of appetite, general weakness and difficulty in swal-

gosing. Intratracheal insufflation anesthesia was used. As soon as the esophagus was exposed, the diverticulum was illuminated by the esophagoscope and an attempt was made to raise it to the surface of the wound, which was unsuccessful until the esophagoscope had been withdrawn about half the length of the diverticulum. Then upward pressure brought it into view so that it could be grasped with a tenaculum forceps and raised above the clavicle. The few muscle

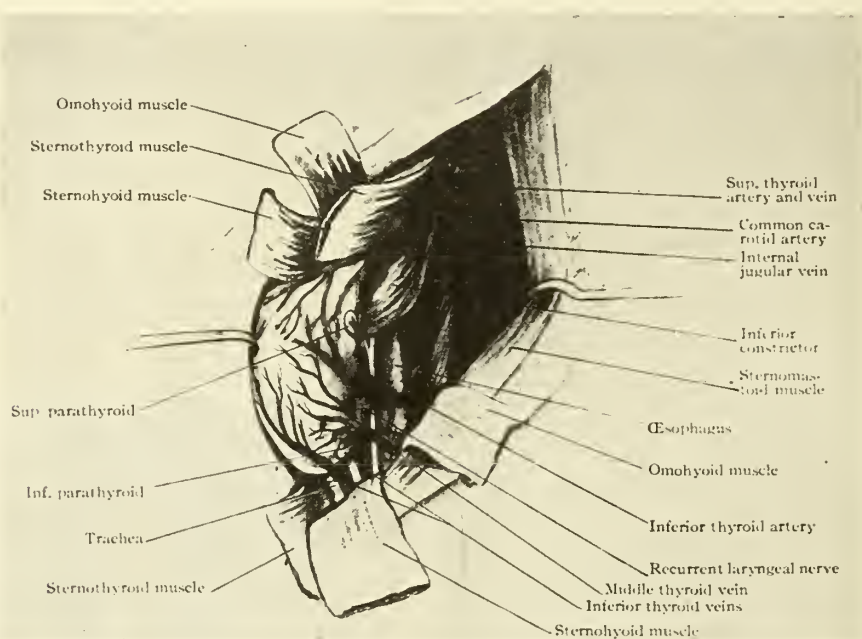


Fig. 2. Surgical exposure of esophagus (Davis).

lowing. The patient has had frequent attacks of indigestion during the past forty years which he would attempt to relieve by taking soda. While he suffered no severe pain upon eating, he felt very uncomfortable and would vomit two and a half or three hours later, and would also regurgitate large amounts of gas. He well remembered that he used to regurgitate pieces of undigested apple when he was a very little boy. While throughout his life he vomited undigested food, this inconvenience did not interfere with his general health. About ten years ago he began to be annoyed by a peculiar sound in his throat on swallowing fluids and since then he has had difficulty in swallowing at times. He experienced greater difficulty in swallowing fluids than solid foods.

Physical examination revealed a very emaciated male of advanced age in a very weakened condition generally and with a badly coated tongue. Other than this, he presented the usual physical findings of an aged man.

On May 12, 1926, the patient was operated upon after the method described by Gaub and Jackson.<sup>3</sup> An incision was made along the outer border of the sternomastoid muscle extending downward to the sternum. Very little difficulty was experienced with the structures between the integument and the esophageal wall. Just previous to operation, the diverticulum was cleansed by a suction tube in the hands of the esopha-

gologist. Intratracheal insufflation anesthesia was used. As soon as the esophagus was exposed, the diverticulum was illuminated by the esophagoscope and an attempt was made to raise it to the surface of the wound, which was unsuccessful until the esophagoscope had been withdrawn about half the length of the diverticulum. Then upward pressure brought it into view so that it could be grasped with a tenaculum forceps and raised above the clavicle. The few muscle

fibres in evidence were easily dissected from the sac and it was transfixed at its base after the manner of dealing with the ordinary inguinal hernia sac. A Penrose drain was placed in the bottom of the wound and the structure approximated in the usual manner. A duodenal tube was placed in the esophagus and attached to the side of the neck for feeding purposes. This was removed in thirteen days, after which recovery was uneventful.

The patient weighed ninety-two pounds on entering the hospital March 17, 1926, 108 pounds on the day he left the hospital, June 19, 1926, and 125 pounds on November 23, 1926.

The patient is the oldest individual successfully operated upon for this condition so far as our brief review of the literature reveals.

In conclusion, I should say that the Gaub-Jackson operation is a very efficient method of dealing with esophageal diverticula.

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interferes with the "creeping" function as described above.

The function of the crico-pharyngeus muscle is of importance. This band is in habitual contraction except when the bolus of food is passing into the esophagus. It is contracted when the other circular fibres of

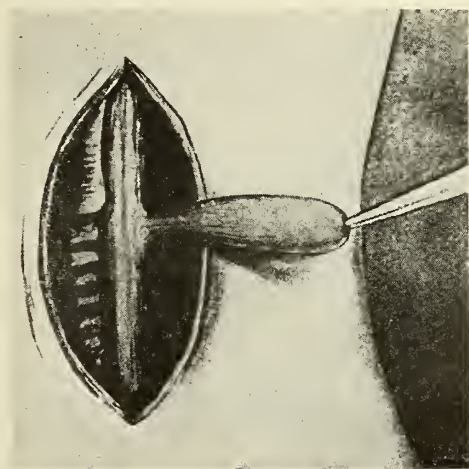


Fig. 3. Excision of an esophageal diverticulum. (Richardson, *Annals of Surgery*.)

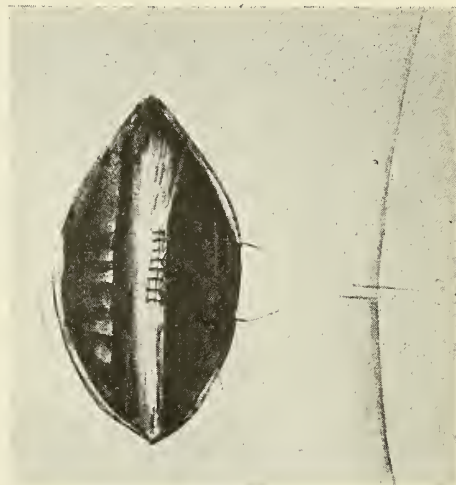


Fig. 4. Excision of an esophageal diverticulum; the operation completed. (Richardson, *Annals of Surgery*.)

#### DISCUSSION

DR. KENNETH A. PHELPS (Minneapolis): In discussing the esophagoscopy phases of this subject, I shall consider three points: (1) The etiology of the condition; (2) the diagnostic value of the esophagoscope; and (3) the treatment of this condition by means of the esophagoscope.

1. The production of pharyngeal diverticula is directly related to the mechanism of deglutition, to that phase, particularly, which takes place in the pharynx. We are not concerned with what happens in the mouth or the esophagus. The usual description of the act of swallowing is about as follows: "It is the propulsion of a bolus, by a contracting band of muscle, preceded at a lower level by a band of muscular relaxation; that is, a squeezing onward of the mass." Mr. Negus of London, in the best paper published on this subject, draws attention to the important function of the longitudinal muscles. He gives the example of a snake swallowing a rabbit—the snake appears to creep forward over its prey rather than the rabbit being squeezed down the gullet. In the case of fish, which are destitute of a larynx, the swallowing act is of the same creeping character. A band of circular fibres contract, thus preventing the bolus from moving backward; the longitudinal fibres contract, pulling up the next segment of gut, in which the circular fibres now contract and force the bolus onward. Thus all along the gut, first one set of fibers contract and then the other.

In man, the anatomical arrangement of the pharyngeal muscles due to the presence of a larynx primarily, and secondarily due to the descent of the larynx from its fetal position opposite the base of the skull to the level of the fourth, fifth and sixth cervical vertebrae,

the pharynx and esophagus are relaxed and it relaxes when the others contract. This muscle arises from the lower part of the cricoid cartilage and the fibres fuse together behind. Its function is to keep air out of the esophagus during respiration, and it must have a powerful action to perform its function. All esophagoscopists, especially those working under local anes-

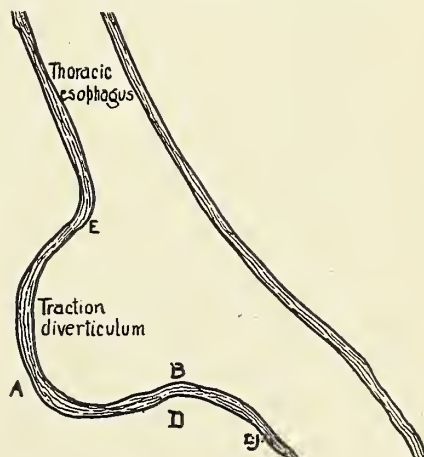


Fig. 5. Schematic illustration of the classic type of traction diverticulum. (Jackson & Shallow, *Annals of Surgery*.)

thesia, will agree that this muscle is powerful, for no examination of the esophagus is possible while it contracts.

The creeping mechanism in the pharynx is carried out as follows: As the bolus passes downward, the oblique fibres of the constrictors draw up the tube;

the elevators of the larynx act similarly, and the palato-pharyngeus and stylo-pharyngeus also help to draw up the pharynx. Thus the presence of a larynx interferes with the food tube being pulled up equally on all sides. In man, the longitudinal esophageal fibres are attached principally to the cricoid cartilage and not

the mucous membrane protrudes, food can get into the pouch and this causes a gradual enlargement.

Because the symptoms and signs of this condition are referred to the esophagus, the pouch is generally known as esophageal. However, this term is anatomically incorrect, as the dilatation does not arise from nor

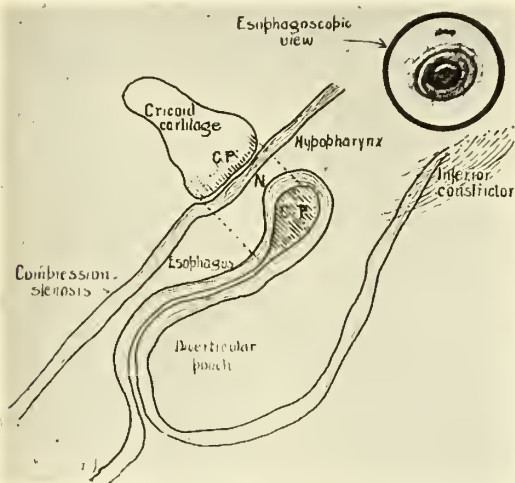


Fig. 6. Schematic illustration, pulsion diverticulum. (Jackson & Shallow, *Annals of Surgery*).

to the cartilage of Santorini, as is the case in the lower animals. Man thus misses the funnel action of such an arrangement and a partial loss of the synchronous closure of the larynx and opening of the esophagus exists.

Also, the longitudinal fibres are practically absent from the posterior surface of the pharynx at its lowest part and from the posterior part of the upper esophagus. The longitudinal fibres collect at the anterior surface of the esophagus about one inch from its upper end and to attach to the aponeurosis of the cricoid cartilage. This arrangement means that a contraction of the longitudinal esophageal fibres draws up the anterior part of the esophagus more than the posterior, which remains more or less stationary.

The palato-pharyngeus muscle is a special collection of longitudinal fibres which helps raise the posterior wall of the esophagus, but not efficiently, for the fibres fade away in the pharynx. This again means the unequal elevation of the esophageal mouth. This muscle is the one taking part in the lateral gutter in animals which allows them to swallow and breathe at the same time. Food in man is not, therefore, directed away from the posterior pharyngeal wall by such a means and this tends to put more strain on an already weak spot.

Lack of relaxation of the crico-pharyngeus muscle at the proper moment means that a part of the bolus remains in the pharynx above a tightly constricted ring of muscle. Now the pharyngeal muscles contract and food cannot move up, down, or forward, on account of the rigid larynx. Posteriorly is an area, unprotected save by vertebrae, and here herniations occur. Once

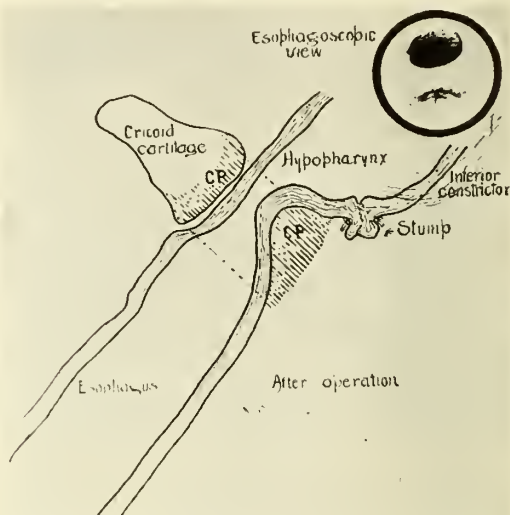


Fig. 7. Schematic illustration showing post-operative result.

communicate with the esophagus but arises in the area between the lowest circular and the adjacent oblique fibers of the inferior constrictor muscle of the pharynx. Hence the diverticulum should be called pharyngeal.

2. One would suppose from the name "diverticulum" that in passing an esophagoscope down the esophagus one would notice a little side opening leading off into a pouch. This, however, is far from the case. Usually, in pharyngeal diverticula, the whole hypopharynx ends in a blind sac. The upper orifice of the diverticulum is seemingly the entire pharynx.

The subdiverticular esophageal opening, on the contrary is a minute cleft up above the bottom of the diverticulum, and usually on the anterior wall of the diverticulum, often close against the cricoid cartilage. (Jackson).

By means of the esophagoscope, the presence of a malignancy, a cicatrix, a spasm or external compression can be determined. These conditions may cause a dilatation very similar in x-ray appearance to the true diverticulum. Ulceration of the mucosa of the sac and the definite location of the sac can be positively determined by esophagoscopy. X-ray examination of patients with suspected diverticula should, of course, never be neglected, but I believe the safety and ease of esophagoscopy means that this diagnostic procedure should also always be employed. Certainly the surgeon may often be saved considerable embarrassment if he gets the complete diagnosis which the esophagoscope offers.

3. In the surgical treatment of this condition, some

men believe the esophagoscope is indispensable. Its use certainly simplifies the procedure of the surgeon. Tracheal anesthesia is quite ideal and the introduction of a tube into the trachea by means of the esophagoscope takes but a minute. Next, the sac can be thoroughly cleaned out, thus avoiding manipulation of a

tion in the esophageal wall. The pressure in the esophagus causes a small hernia at the point of weakness and the sac thus formed gradually becomes larger and larger, some reaching the size of eight centimeters in diameter.

Pulsion diverticuli are sometimes divided into two

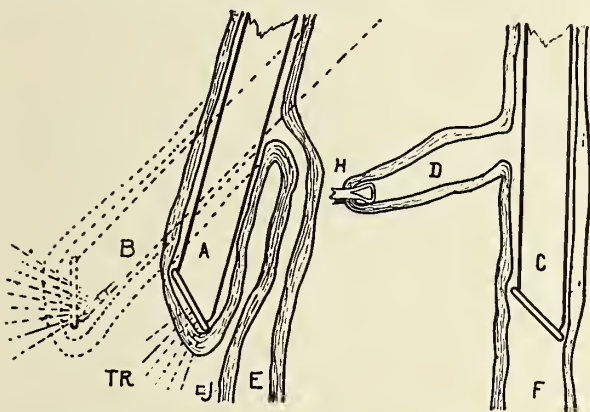


Fig. 8. Schematic illustration showing positions of esophagoscope when used as a guide during removal of esophageal diverticulum. (Jackson & Shallow, *Annals of Surgery*).

partially filled pouch and squeezing out its semi-putrid contents, which may be inhaled. Anything which eliminates the danger of aspiration pneumonia is certainly worth while. The sac can be transilluminated by the esophagoscope and lifted from its bed, thus permitting the operator to quickly pick up, thus shortening the time of dissection and lessening the danger of mediastinitis. The esophagus below the diverticular opening can be examined to see that its lumen is of good size. The subdiverticular orifice too can be dilated, thus preventing postoperative leak and recurrence of the diverticulum. The Rehffuss tube can also be inserted through the esophagus for the purpose of postoperative nourishment.

#### CONCLUSIONS

1. This condition is caused largely by certain evolutionary factors responsible for the anatomy of the pharynx.

2. The esophagoscope is of considerable aid in the diagnosis and treatment of this condition.

DR. RUSSELL GATES (Minneapolis): Before the days of  $x$ -ray the diagnosis of diverticuli of the esophagus was very difficult; but the  $x$ -ray findings are so characteristic that the diagnosis of this condition is quite easy. The routine examination of the esophagus is made with the patient in the right oblique position and erect if possible. The patient drinks a thick barium mixture and its course through the esophagus is observed fluoroscopically. Plates may be made in whatever position desired.

Diverticuli of the esophagus are divided into two general classes: pulsion and traction.

1. *Pulsion Diverticuli*.—This type occurs at a point of weakness in the walls of the esophagus. The weakness may be anatomical or pathological, due to ulceration

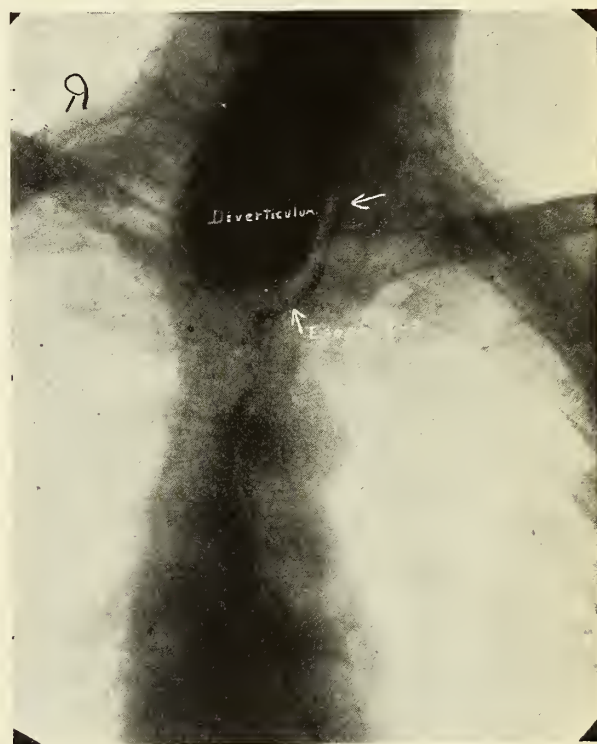


Fig. 9. X-ray picture showing barium-filled esophageal diverticulum, right side.

classes according to their location. The first and most common type occurs near the junction of the pharynx and esophagus, at a point where the esophagus is not so completely surrounded by muscles as in other parts of the esophagus and where there is therefore an area of anatomical weakness. The second type of pulsion diverticuli, called deep seated, occur mostly in the lower third of the esophagus. All pulsion diverticuli present about the same characteristics.

The fluoroscopic examination shows the barium passing down the esophagus into the sac of the diverticulum. The barium mixture fills the diverticulum and then passes through the remainder of the esophagus. The barium of course may pass into the sac and through the main course of the esophagus at the same time. If the diverticulum is large, the remainder of the esophagus may not fill because of pressure on the main course of the esophagus. Compression of the trachea may also be noted. Diverticuli in the pharynx arise from the posterior wall but usually lie to the right of the midline. As a result the main course of the esophagus is usually displaced to the left. The pulsion diverticulum is seen as a smooth round pouch of barium and its opening into the esophagus is nearly always near

the top of the sac. The deep scated pulsion diverticuli may be multiple while those occurring near the pharynx are single.

2. *Traction Diverticuli*.—This type is the result of disease outside the esophagus. They usually occur at the level of the lung hilus and are due as a rule to infection of the hilus lymph nodes. Traction diverticuli are of varying size, are irregular and usually tent-shaped.

The differential diagnosis of diverticuli is usually not difficult because they present such a typical picture. Benign stricture and carcinoma may cause dilatation of the esophagus above the lesion, which may simulate a diverticulum, but careful examination will disclose a definite and constant irregularity of the wall of the esophagus below the dilated area. Also no definite pouch will be made out and the compressed or displaced main course of the esophagus will be missing. In lesions of the lower third of the esophagus severe degrees of cardiospasm must be ruled out.

There is one important point which must be remembered when a diverticulum is suspected. That is, the pouch may be filled with food from previous meals. In that event the barium may not pass into the pouch

and the diverticulum may be missed. Re-examinations, however, will usually show the diverticulum.

The case reported is a pulsion diverticulum occurring at the level of sterno-clavicular notches. The following x-ray report was submitted:

Fluoroscopic examination of the chest shows a rounded opaque shadow about two inches in diameter at the level of the clavicles and in the midline. This no doubt is a pouch filled with barium which had been given five days previously.

Fluoroscopic examination and plates made during the ingestion of a barium meal show the barium passing directly into the pouch. The barium swallowed at this time distended the pouch to a size about two by three inches. After the pouch was filled, the barium passed through the remainder of the esophagus and into the stomach. Plates show that the pouch lies mostly in the midline but slightly to the right. The esophagus proper curves definitely to the left at the level of the pouch. The remainder of the esophagus shows no evidence of abnormality.

#### CONCLUSION

Large diverticulum of esophagus at the level of the sterno-clavicular notches.

#### "DENICOTINIZED" TOBACCO

So-called denicotinized tobaccos and tobacco products for which reduced nicotine content is claimed or implied by label declaration are now being offered for sale. Some of these are claimed to be "absolutely harmless." The Connecticut Agricultural Experiment Station has published a report on denicotinized tobaccos which shows that the nicotine content of these products varies considerably just as in the case of ordinary tobaccos. As a group they were found to contain somewhat less nicotine than tobacco. Some "denicotinized" products on sale contained as much nicotine as is likely to be found in ordinary tobaccos; a few contained substantially less. None of the "denicotinized" tobaccos examined are sufficiently poor in nicotine to warrant unrestricted indulgence on the part of consumers who suffer ill effects from this alkaloid. It is pointed out that the consumer of "denicotinized" tobacco products may consume larger quantities than of the ordinary product, partly because he believes it to be largely or entirely freed from its objectionable nicotine, and partly in an unconscious effort to secure the satisfying effects he is accustomed to derive. Consequently his actual nicotine intake may equal or exceed his usual consumption. (Jour. A. M. A., August 18, 1928, p. 501; August 25, 1928, p. 583.)

#### CARGEL NOT ACCEPTABLE FOR N. N. R.

The Council on Pharmacy and Chemistry reports that "Cargel" is the proprietary name applied by the H. K. Mulford Co. to an emulsion of lanolin in an aqueous solution of mild silver protein and casein. According to the information furnished the Council, the mixture is prepared by dissolving casein in an alkaline solution of sodium, potassium and calcium hydroxides, incorporating an amount of lanolin equal to the casein, and adding a solution of mild silver protein in such amount that the finished product contains from 1 to 1.25 per cent of metallic silver, equivalent to a 5 per cent mild silver protein solution. The preparation is a pharmaceutical mixture, which does not present any special originality or striking advance, and which, therefore, is not entitled to a coined name under the rules governing the Council in the recognition of proprietary names for mixtures. Furthermore, the Council held the name misleading, since, according to the manufacturer, it was intended to indicate that the substance is a "gel," whereas in fact it is merely a creamy emulsion. The Council declared "Cargel" unacceptable for New and Non-official Remedies because the name is misleading and is not descriptive of the composition of the product to which it is applied. (Jour. A. M. A., August 4, 1928, p. 321.)

THE EXCURSION OF THE COSTAL MARGINS AND OF THE  
COSTAL ARCH FOLLOWING PHRENIC NEURECTOMY:  
EXPERIMENTAL AND CLINICAL OBSERVATIONS\*

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A study of the embryology of the diaphragm reveals certain facts relative to its origin that serve as implications of innervation and function. The diaphragm first appears in the fetus high up toward the head, and within its structure are incorporated the phrenic nerves which in the perfected state are to provide for motor function. If the phrenic nerves are paralyzed the diaphragm becomes functionless except in its capacity as a partition dividing the *cœlom* into its two most important divisions. The destruction of one phrenic nerve at once causes paralysis of the hemidiaphragm, and atrophic changes occur within two days which persist indefinitely. The paralysis includes every portion of the hemidiaphragm. The atrophy is equal throughout its whole area from center to circumference and there is a sharp line of demarcation between the paralyzed and unparalyzed parts. There is no evidence of cross innervation and no evidence of any other motor nerve sufficient at least to prevent atrophy. Because of the parts derived from the wall of the body evidence is added to the hypothesis that the intercostal nerves may supply motor fibers as they do sensory fibers. There is no doubt that they do send fibers to the diaphragm. Higgins has demonstrated them and Felix is convinced that at least one is motor in function. The point that interests the student of function and correlated muscular action is that paralysis of one nerve, the phrenic, paralyzes the hemidiaphragm in its entirety. Thus with one-half paralyzed the effect on respiratory movements can be studied by comparison with the normal side. The primary function of the diaphragm, to increase intra-abdominal pressure, may be neglected in these observations. Its respiratory function depends on rhythmic movement that increases the long diameter of the thorax, increases the negativity of intrapleural pressure and fills the lungs with air.

There are three conceptions of its influence in producing movements of the thoracic wall. The first may be called the anatomic. When at rest the diaphragm presents a domed surface with the convexity toward the thorax, produced by the negative intrapleural pressure assisted by the positive intra-abdominal pressure. During inspiration it moves downward, producing increased intra-abdominal pressure because its downward movement is opposed by the abdominal muscles. In its rôle as a respiratory organ its action overcomes the opposition of the abdominal muscles and the abdomen and the lower portion of the chest are distended during inspiration. Because of this opposition, the central tendon becomes a fixed point and the circumferential muscles in contraction actually elevate the lower ribs and expand the lower part of the thoracic cavity. In its rôle as a compressor of the abdominal viscera the resistance of the abdominal muscles is increased so that distention is not permitted. This is the action under more purely voluntary control and without it there would be great difficulty in evacuating the large bowel, bladder or gravid uterus.

The second is more properly the physiologic conception. McLeod points out that the ascent of the ribs which increases the anteroposterior and transverse diameters of the chest would tend at the same time to decrease the long diameter were it not for the fixation of the lower ribs and the descent of the diaphragm. Because of embryologic implications it would be appropriate to expect that the thoracic muscles, like the abdominal muscles, should have an action in opposition to that of the diaphragm. McLeod explains that the attachment to the lower six ribs merely tends to pull the margins toward the middle line and that this tendency is overcome by the opposing action of the external intercostal muscles which raise the ribs and by the lower vertebral muscles which fix the position of the lower ribs. With the descent of the diaphragm and

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the increase of intra-abdominal pressure the rib margins are forced away from the median line at the same time that the ribs are elevated. The correlated action increases the volume of the thorax by enlarging it in three diameters.

The third conception is a combination of the anatomic and physiologic and was arrived at both experimentally and clinically. Hoover believes (1) that the contraction of the external intercostal muscles raises the ribs and increases the angular divergence of the subcostal angle, and (2) that the contraction of the diaphragm narrows the subcostal angle and tends to force the rib margins toward the median line. He supports this belief by the observation that in paralysis of the diaphragm the subcostal angle is increased while in paralysis of the intercostal muscles the angle is decreased.

#### CLINICAL AND EXPERIMENTAL OBSERVATIONS

Since 1926 I have studied a large number of animals in which (1) one phrenic nerve was cut, (2) both phrenic nerves were cut, (3) the intercostal nerves were sectioned on one side, (4) the intercostal nerves were sectioned on both sides, (5) combinations of intercostal sections were studied with combinations of phrenic sections. The study has included observations following transection of the spinal cord at the level of the sixth dorsal vertebra. The operation has been performed on normal animals and on animals in whom one phrenic nerve had been cut.

During this time clinical observations were made on human beings after unilateral phrenic neurectomy had been performed on patients with eventration, congenital absence of the hemidiaphragm and diaphragmatic hernia with viscera filling one side of the thorax. The behavior of man to these conditions is precisely the same as that of animals and the respiratory movements are influenced in the same way.

Unilateral phrenic neurectomy causes paralysis of the hemidiaphragm, which rises domelike into the thorax and shortens the long diameter of the chest. That portion of the diaphragm is functionless except as a partition dividing the coelom into two compartments. The usual rhythmic movements that make it a respiratory organ are abolished and respiratory movements are carried on by the intercostal and accessory muscles, such as the scalenus. Compensation is so great a fac-

tor in respiration and the diaphragm is of such secondary importance that the movements of the wall of the chest as a whole and in any of its parts are uninfluenced by the loss of the paralyzed part. This truth has been definitely established to my satisfaction after a large number of observations and clinical examinations combined with simultaneous kinematographic records taken at various levels including the arch and the costal margins and with actual measurements of the expansive excursion during inspiration and after direct examination of the chest with the margins and arch exposed to the level of the ribs, so that the confusion occurring because of a sliding integument was removed.

A disinterested observer could not possibly distinguish animals so operated on from their normal mates except by fluoroscopic evidence or the presence of an operative scar in the region of the neck.

I have carefully observed patients following phrenic neurectomy and have included in my study only those whose chests before operation were symmetric and whose thoracic movements were bilaterally equal in direction and length of excursion, and found precisely the same result. The chest movement remains the same in character and in degree and the angular divergence of the subcostal angle remains unchanged. The side operated on does not move through a greater excursion because it has lost the opposing force of the diaphragm. It can also be shown experimentally that the decreased movement following unilateral section of all or part of the intercostal nerves is not changed by combining this operation with phrenic evulsion on that side. In all academic discussions concerning function it is well to decide between theoretic considerations or implications and practical results, remembering that respiration is a fundamental function and is well protected by a reserve that permits of a loss in muscular equipment without observable departures from normal, either in motion or efficiency of function. It is well to remember that a man can live normally with total paralysis of the diaphragm, and if the phrenic nerves are uninjured he can live with fracture of the cervical vertebræ at a level which paralyzes all muscles below the fracture. A dog can live and provide himself with tidal air under the same conditions even if one phrenic nerve is also cut.

Under all these circumstances in man or in

animal the costal arches and the costal margins remain symmetric and the outward movement during inspiration remains bilaterally equal. This is true in animals in which the spinal cord has been transected (at the level of the sixth cervical vertebra) and the phrenic nerve cut on one side. Here the downward pressure of the contracting hemidiaphragm transmits its force equally in all

directions and the abdomen is distended while at the same time the costal margins and arches are pressed outward through an equal excursive distance.

There is only one procedure that consistently alters the symmetry and the outward movement of the costal arch and costal margin: paralysis of the intercostal muscles on one side.

#### PEDODYNE FOR BUNIONS

The "Kay Laboratories" of 180 North Wacker Drive, Chicago, is the trade style used by one George J. Katz in selling quack remedies for bunions, corns, chilblains and perspiring feet. The name of George J. Katz is not unknown to quackery. The name of Katz does not appear in the advertising of the Kay Laboratories. Instead, the circular letters are signed "George J. Kay," who, doubtless, is nonexistent. In order that the public and medical profession might know something about this "most scientific" treatment for bunion trouble, the A. M. A. Chemical Laboratory analyzed "Pedodyne." From its analysis, the Laboratory concludes that a product having the essential composition of the ointment part of Pedodyne for Bunions may be made by melting 300 parts by weight of animal fat and adding 3.6 parts by weight of salicylic acid, 3.5 parts by weight of phenol and one part by weight of iodine, to which is added a relatively small amount of camphor and menthol. The Laboratory concludes that a preparation having the essential composition of Pedodyne Foot Aid—which accompanies the ointment—may be made by mixing together talc, 40 parts; boric acid, 40 parts; borax, 10 parts; alum, 5 parts; zinc oxide, 3 parts; salicylic acid, 1 part. That the use of these preparations will cure any case of hallux valgus (bunion) is a claim that to physicians is obviously false. (Jour. A. M. A., August 11, 1928, p. 415.)

#### THE INJECTION TREATMENT OF VARICOSE VEINS

The injection treatment for the obliteration of varicose veins is attracting increasing attention. The French school, under the leadership of Sicard, has been using sodium salicylate in solutions of from 20 to 40 per cent. Linser used 20 per cent sodium chloride solution, and reported 6,000 injections. Noble, in Germany, has made injections in 3,000 patients with 50 per cent dextrose. Meisen uses equal parts of 25 per cent solution of sodium salicylate and 10 per cent sodium chloride. In this country, McPheeters has reported favorable results with sodium salicylate. The most important consideration in connection with the injection method is the danger of pulmonary embolism. Thus far, reports of four cases of fatal pulmonary embolism seem to be available. Of these, two occurred after correct technic and therefore appear unavoidable. Against these two fatalities there are reports of 14,000 successful injections. The efficacy of the method will depend much on the proper selection of cases. Definite contraindications to the injection method include cardiac and renal disease accompanied by venous stasis and dilatation of veins, hypertonus, changes in and obliteration of the deeper veins, pregnancy, and large intrapelvic tumors. (Jour. A. M. A., August 4, 1928, p. 322.)

# HODGKIN'S DISEASE IN CHILDREN: A CLINICAL STUDY OF THIRTY-THREE CASES\*

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**T**HIRTY-THREE cases of Hodgkin's disease in children under fifteen years of age have been observed at the Mayo Clinic since January, 1900. In twenty cases the diagnosis was confirmed by biopsy or at necropsy. In the remaining thirteen cases, the clinical signs were considered sufficiently typical to warrant diagnosis without the pathologist's report. Three cases that did not conform in all features to the usual manifestations of Hodgkin's disease were discarded.<sup>1,2,3</sup>

## AGE AND SEX

In this series of cases the first symptoms occurred between the ages of two and fourteen years, the average age being nine and a half years. The duration of symptoms before the child was observed at the Clinic varied from seven weeks to nine years; there was no relation between the severity of the symptoms and the duration of the illness.

The ages of patients at the onset of the disease, divided into five year periods, present three groups; in the first five years there were sixteen cases, in the second five years thirteen cases, and in the third five years four cases. The ages of these patients when they were first observed at the Clinic do not parallel with this, but fall into the following groups: in the first five years there were seven cases, in the second five years twenty-one cases, and in the third five years five cases.

The most rapid development of the disease occurred in the case of a boy aged ten years. A history of initial infection could not be obtained. He came to the Clinic with large tumors on both sides of the neck, and a mass of lymphoid tissue in the pharynx, seven weeks after the enlargement was first noticed. Twelve of the thirty-three patients are known to have died before March, 1927, and one was moribund at that time. Table 1 shows that there is no relation between the age at onset and the duration before the fatal issue.

TABLE 1

AGE AT ONSET OF SYMPTOMS: TOTAL DURATION  
OF DISEASE IN PATIENTS DEAD OR MORI-  
BUND IN MARCH, 1927

Age at onset, years	Duration, months
3	35
4	8
4	12
5	28
5	33
5	12
7	22
8	30
8	15
9	23
10	24
11	36
12	17

Most of the children observed were boys, thirty of the thirty-three.

## ONSET OF DISEASE

A definite history of infection at the onset of the disease was given in twelve cases. In all of these the infectious process was the first evidence of ill health. The nature of the precipitating infections is shown in Table 2.

In one case, in which there was a history of German measles, a small node was palpable in

TABLE 2

INFECTION AT ONSET

Type	Cases
Cold and cough with fever.....	4
Infected tooth (gingivitis).....	2
Influenza .....	1
Chickenpox with night terrors.....	1
Scarlet fever.....	1
Mumps .....	1
German measles .....	1
Jaundice with cold, fever and delirium.....	1

the cervical region before the infection manifested itself. Measles precipitated further enlargement of the lymph nodes; this became rapidly progressive at once.

In two cases there was a history of trauma immediately preceding the appearance of the enlarged nodes. In one case a boy aged four was struck while at play by a piece of mud; this caused contusion behind the angle of the right

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jaw whereupon the nodes immediately enlarged. In the other case a boy of seven was lifted by his head, and following this characteristic masses appeared in the left cervical region and left axilla. However, the child was subject to frequent colds and continued to have them throughout his illness, so possibly trauma should not be stressed too much as an etiologic factor.

In three cases constitutional symptoms preceded the usual objective findings. One child, aged four, complained of fatigue and lassitude several months before the nodes appeared. Another child first experienced a cold with jaundice and high fever, and during the six months preceding the appearance of the enlarged nodes there were frequent attacks of high fever with delirium, but no recurrence of jaundice. When the child was examined at the Clinic, one year after the initial cold, he complained of abdominal pain, and both the liver and the spleen were found to be enlarged. Characteristic adenopathy involving the left cervical and both axillary groups was observed. The third child presenting early constitutional symptoms was aged five years; he had always been weak and had developed slowly. "Wheezing" in the chest and recurrent fever had been present for about a year and a half, and a roentgenogram at the onset of these symptoms led to a diagnosis of enlarged thymus. The cervical and axillary nodes were palpable, but not markedly enlarged when the child was observed. The other symptoms—wheezing, backwardness and recurrent fever—so overshadowed the manifest enlargement of the lymph nodes that the date of onset of the last symptom could not be given. In all probability it occurred later than the constitutional disturbances.

In all the remaining cases, the first symptom of Hodgkin's disease was the enlargement of the lymph nodes, excluding, of course, the initial infections mentioned. The cervical group was the first to become involved, either unilaterally or bilaterally in all but one case. In this case the initial enlargement was in the left axilla, and was soon followed by involvement of the left cervical group. In fifteen cases the total apparent enlargement remained confined to the cervical region, bilateral in eleven cases, left in two, and right in two. Limited involvement of the superficial nodes does not, however, parallel the

condition of the deeper structures. Five of these fifteen cases in which only the cervical nodes could be palpated externally, showed enlargement of the mediastinal group by roentgen-ray

TABLE 3  
INITIAL LYMPHATIC INVOLVEMENT

	Cases
Right cervical.....	11
Left cervical.....	14
Simultaneous bilateral cervical.....	7
Right axillary.....	None
Left axillary.....	1
Right cervical alone.....	2
Left cervical alone.....	2
Bilateral cervical alone.....	11
Right cervical and right axillary.....	1
Bilateral cervical and bilateral axillary.....	4
Left cervical and left axillary.....	4
Left cervical and bilateral axillary.....	3
Bilateral cervical and left axillary.....	1
Left cervical, bilateral axillary and bilateral inguinal.....	1
Bilateral cervical, bilateral axillary and bilateral inguinal.....	3
Bilateral cervical and bilateral inguinal.....	1

TABLE 4  
ABDOMINAL SYMPTOMS

	Cases
Enlarged spleen	
Without other abdominal lesions.....	6
Associated with enlarged liver.....	2
Associated with enlarged liver and pain.....	2
Associated with pain and ascites.....	2
Associated with enlarged lymph nodes and ascites.....	1
Associated with enlarged lymph nodes and pain.....	1
Total .....	14
Enlarged liver	
Associated with enlarged spleen.....	2
Associated with enlarged spleen and pain.....	2
Without other abdominal lesions.....	1
Associated with pain and enlarged lymph nodes.....	1
Total .....	6
Ascites	
Associated with enlarged spleen and pain.....	2
Associated with enlarged spleen and enlarged lymph nodes.....	1
Total .....	3
Abdominal pain	
Associated with enlarged spleen and ascites.....	2
Associated with enlarged spleen and enlarged liver.....	2
Associated with enlarged spleen and enlarged lymph nodes.....	1
Associated with enlarged liver and enlarged lymph nodes.....	1
Total .....	6
Enlarged lymph nodes	
Associated with enlarged liver and pain.....	1
Associated with enlarged spleen and pain.....	1
Associated with enlarged spleen and ascites.....	1
Total .....	3

examination. Also in seven cases in this same group the spleen was enlarged. In three of these the liver was enlarged as well, and abdominal pain was present in two of them (Tables 3 and 4).

#### FEVER

Fifteen patients are known to have had intermittent or recurrent fever throughout the illness. Six of these were among those with a history of a definite infectious process at the onset. In the other nine the fever persisted over a considerable period, was often obscure in nature and sometimes occurred in the absence of marked objective data. This was a most remarkable feature in the case of a boy aged seven and a half years, who had had a temperature of from 99° to 105° F. for at least nineteen months before the diagnosis of Hodgkin's disease was made in the Mayo Clinic. At the onset the boy was weak and listless and was sent to the school dentist for examination. His temperature at that time was 104° F. No enlarged nodes were discovered. Various types of treatment were given, including tonsillectomy and irradiation of the chest for an enlarged thymus. The latter caused temporary improvement in the general condition but only a short remission of the increased temperature. For a number of months before the child came to the Clinic the temperature remained usually between 104° and 105° F., although he was up and about every day. Examination revealed only a few small nodules in the cervical region on both sides, and a few small palpable nodes in the axilla. The spleen was enlarged and there was marked thickening around the hilus of the lungs. From a node removed from the cervical region Hodgkin's disease was diagnosed by the pathologist. The temperature dropped to normal after the biopsy and remained normal until the patient was dismissed from the Clinic.

#### VARIATION IN SIZE OF THE LYMPH NODES

In almost a third of the cases a definite history was given of recession of the nodes after the primary enlargement was observed. This was a striking symptom in the series. A number of cases showed repeated recessions before the process either remained stationary or advanced without remissions. In three cases the recurrences after recession were associated with fever.

Sometimes repeated colds served as fresh stimuli to the advance of the process, the nodes showing definite diminution in size in the intervals between respiratory infections. This observation is contrary to that of Reed,<sup>4</sup> who asserts that the nodes rarely vary after the appearance of the initial enlargement.

#### MEDIASTINAL INVOLVEMENT

In sixteen of the thirty-three cases the nodes in the mediastinum showed involvement in the roentgenogram.<sup>5</sup> All the nodes around the hilus were enlarged. In four of the roentgenograms massive growths were shown extending beyond the region of the hilus and in one case there was evidence of considerable fluid.

In 1900 Wessler and Greene<sup>6</sup> emphasized the importance of roentgen-ray diagnosis in Hodgkin's disease. They divided their diagnostic data into four groups: (1) large massive mediastinal shadows; (2) infiltrative growths spreading into the lungs from the hilus, the picture resembling that of a tree; (3) isolated nodules or metastasis, unconnected with the mediastinum, but always associated with other manifestations of the disease, and (4) discrete nodes at the hilus, the analogues of external nodular processes; these are the typical faint homogeneous, lobulated shadows so characteristic as to suggest Hodgkin's disease in the absence of any other signs. The roentgenograms in my series of cases fall into the first and last of these groups. One instance of a true metastatic process was found, but in the absence of biopsy the case was not included in the series.

#### OPERATIVE MEASURES

In twelve of the cases tonsillectomy and adenoidectomy had been performed as remedial measures previous to examination in the Clinic. In six cases the nodes had been resected. In every case recurrence followed surgical removal of the nodes.

#### LESIONS OF THE SKIN

In six cases symptoms of lesions of the skin were present, pruritus without visible lesions in three, generalized lesions in two, and lesions confined to the scalp in one case. In the other three cases the types varied. In one case on two occasions blisters and pustules had covered the body, including the soles and palms, during the

year preceding examination. In one case there was a history of brownish circular lesions all over the body. In the two latter cases the lesions were not seen at the Clinic. In the third case there was an erysipelatoid eruption of the cheek and eye with itching, redness and tenderness. These skin manifestations all fall into Symmers'<sup>7</sup> first group, including incidental changes such as macules, prurigo-like eruptions, lichenification and pigmentation. Symmers'<sup>8</sup> second group comprises only those lesions in which there is infiltration of the skin with the cell composite of Hodgkin's disease. No such lesion was found in this series of cases.

#### RESPIRATORY INVOLVEMENT

In eight cases there was a complaint of cough, and in one of dyspnea without cough. In seven of the nine there was thoracic involvement, as shown by roentgenograms. The dyspnea without cough was associated with fluid in the chest.

#### ABDOMINAL INVOLVEMENT

In almost half of the cases, the spleen was enlarged; in six the liver was enlarged, although not always associated with splenic change. Abdominal masses were found in three cases, in one with abdominal pain and enlarged spleen, in another with abdominal pain and enlarged liver, and in the third with enlarged spleen and ascites (Table 4).

#### EXAMINATION OF THE BLOOD

Examination of the blood did not reveal striking characteristics. The erythrocytes fell below 4,000,000 in only about half of the cases, and in these the decrease was due to general depletion. The leukocytes varied from 2,600 to 16,400; the lowest number was found in a case of profound cachexia. The differential counts did not show any characteristic deviation from normal. Mononucleosis developed rapidly one month after treatment in one case.

#### TUBERCULIN REACTIONS

In twenty-one cases a cutaneous tuberculin test was given. There were no positive reactions; in three only there was a slight or questionable reaction.<sup>9,10,11</sup> This observation is significant because of the acuity of the test during the early years of life.

#### TREATMENT AND OUTCOME

Most of the children were treated by roentgen rays or radium before they returned home. A

number came back through the course of their illness for further irradiation, and many continued treatments elsewhere. Of the twenty-seven treated in the Clinic with roentgen rays, fourteen were treated with radium as well; three were given radium alone. The patients improved almost miraculously.<sup>12,13,14</sup>

Desjardins<sup>15</sup> says that this melting down of the diseased structures is so characteristic of lymphogenic disease that it may be considered a diagnostic test in the absence of biopsy. Nor is the improvement limited to local reaction only. All of the children observed or heard from after treatment showed marked general improvement for a time. Cachexia, if present, cleared up and often the child resumed his usual activities for a number of months before the turning point came. All but one of the patients heard from, who were examined up to one year ago, have experienced this fatal reaction. The one exception presents the longest stage of improvement and by far the most favorable outlook in the series. Five and a half years have elapsed since the onset of the enlargement of the lymph nodes following dental infection. At the time the boy was examined the adenopathy was limited to the cervical and inguinal nodes, and roentgenograms of the chest did not reveal change. The child has been treated every two months. The first course of treatment reduced the nodes 60 per cent. The child's general health is now good; his weight is normal and the nodes, although still somewhat enlarged, have never approached the size they had attained when he was first seen at the Clinic.

The remainder of the patients heard from, unfortunately, do not present so bright a picture. Excluding those seen for the first time during the last year and the one just mentioned, all of those traced are dead or moribund. Of this number, the longest period of survival was thirty-six months from the beginning of the symptoms, and the shortest eight months (Table 1), with an average of twenty-two and a half months.<sup>16,17</sup> In Desjardins and Ford's<sup>18</sup> cases the average duration in the first decade was four years, and in the second two years and nine months. Lehdorf<sup>19</sup> finds that the disease is more malignant in early life and believes this to be due to the more intense reaction of children to pathologic stimulation in general. He finds higher fever, and more rapid growth and less

favorable response to treatment, in the early period of life.

The duration of the improvement after treatment is extremely varied. The longest period thus far has been five and a half years. The child was carefully observed and given treatment every two months. Equally energetic care in other cases was without avail. The most rapid issue followed a course of both radium and roentgen-ray treatments. This child was the one who was lifted by the head before the onset of the enlargement of the lymph nodes; he also had been subject to frequent colds. He showed the usual beneficial results after treatment for two weeks; he then contracted a cold and died two weeks later. There was no recurrent enlargement of the nodes preceding death, but the spleen showed rapid enlargement.

Splenic growth after treatment in the absence of recurrence of the superficial nodes is not unusual. It occurred in five cases of the series from two weeks to fifteen months after treatment was instituted. It is to be remarked again that in none of these cases was there recurrence of the original nodes after treatment. In one case the liver also became enlarged.

In only three cases did the original nodes recur. These always reappeared suddenly and quickly attained greater size than the first. Recurrence occurred one month, six months, and one year, respectively, after the first treatments.

Edema was a part of the final picture in five cases; in three it was extensive. In one case it was limited to one arm, and was probably due to pressure from the recurrent nodes, and in the other it was confined to the face and finger-tips without apparent enlargement of the nodes.

The most common terminal symptom was weakness. It occurred in a third of the patients in the series. Of especial interest is a terminal blood change that took place a short time after treatment of the boy aged five years who had been injured on the side of the neck at the onset of the illness, six months before observation at the Clinic. On examination bilateral cervical and right axillary involvement was noted but no change in the chest. The leukocytes numbered 15,200, erythrocytes 4,480,000, and the differential count was normal. The diagnosis of Hodgkin's disease was confirmed by biopsy. Roentgen-ray and radium treatments were given with 60 per cent improvement, both general and local.

A month later high fever and sudden extreme pallor developed. Examination of the blood, as reported by his home physicians, showed that the leukocytes numbered 36,000, with 99 per cent large mononuclear cells, and that the erythrocytes numbered 620,000. Transfusion was given and the erythrocytes reached 900,000 but the child died within a few days.

#### SUMMARY

All of the thirty-three patients in this series were under fifteen years and the symptoms appeared in more than half in the first five years of life. All but three of the patients were boys. More than a third of them presented histories of infectious disease at the onset of the typical symptoms. In two the symptoms appeared following trauma and in three constitutional symptoms preceded enlargement of the lymph nodes. Cervical involvement predominated in the adenopathy. Variation in the size of the nodes occurred in about a third of the cases and is an outstanding feature in the series. In half of the cases there was mediastinal involvement. Abdominal symptoms were common, the most frequent being splenic enlargement. Of the twenty-one cases in which a tuberculin test was made, none gave a definite positive reaction and only three gave questionable reactions. Twenty-seven patients were treated by irradiation and of these thirteen are known to be dead or moribund, although all of them had shown remarkable immediate response to treatment. The average length of life was twenty-two and a half months. The life of only one was definitely prolonged, which may be accounted for by persistent treatment. He is living and comfortable at the present time, five and a half years after the onset of symptoms.

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#### VITALIPON NOT ACCEPTABLE FOR N. N. R.

The Council on Pharmacy and Chemistry reports that Vitalipon is claimed to be a 5 per cent solution in olive oil of lipoids extracted from vegetable and animal embryonic organs with the addition of cajeput oil. Consideration of Vitalipon was requested by C. G. Crosby, New York. In the material submitted in favor of Vitalipon, the statement was made that "Vitalipon is the outcome of over thirty years' research work by Dr. O. Schaer of Zurich, Switzerland, in his efforts to develop a cure for carcinoma." In addition to the brief statement of composition, uses, etc., submitted by C. G. Crosby, three documents written by Dr. Schaer were also submitted. The Council found Vitalipon unacceptable for New and Non-official Remedies because it is an unscientific and indefinite mixture marketed under an uninforming proprietary name and with unwarranted therapeutic claims. (*Jour. A. M. A.*, July 7, 1928, p. 29.)

#### TREATMENT OF TAPEWORM IN A CHILD

To children, oleoresin of aspidium may be prescribed in doses of 0.5 Gm. per year of age but not exceeding a maximum dose of 5 Gm. The preparation should include saline catharsis for several days previously, light diet for the day before, and a liberal dose of magnesium sulphate (from 5 to 10 Gm.) and an evacuant enema the evening before the treatment. (*Jour. A. M. A.*, August 25, 1928, p. 584.)

#### THE ACTION OF GLYCEROPHOSPHATES

The general consensus of critical opinion is that the theory under which the glycerophosphates were introduced into medicine is fallacious and that they are useless as tonics. Whatever effects are observed from the mixtures in which these salts are generally buried, may be safely ascribed to the other ingredients. (*Jour. A. M. A.*, August 18, 1928, p. 515.)

## THE UPPER URINARY TRACT IN THE DIFFERENTIAL DIAGNOSIS OF ABDOMINAL EMERGENCIES\*

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EVERY abdominal emergency is a potential catastrophe, and, if unrecognized or inadequately treated, may become a tragedy. Adequate treatment is dependent upon accurate diagnosis. Prompt and accurate diagnosis may be extremely difficult under any circumstances, and in cases of emergency the circumstances may be very trying. The patient and his relatives are often quite insistent on immediate relief; we ourselves are fearful of the result of any unnecessary delay of treatment; under the stress of circumstances we may jump at conclusions not entirely warranted by the facts or borne out by further investigation.

The symptom that brings the patient for help, the symptom that makes him and his relatives so insistent on immediate relief, and the principal symptom that may lead us to jump at conclusions is pain. As the symptom that brings the patient for help, pain is very important; as a symptom on which to base a diagnosis, pain may lead us astray. We are accustomed to think that pains in certain locations and with certain radiations are characteristic of certain lesions. This is not always true. In fact the pain supposedly characteristic of a lesion of almost any one abdominal organ can be exactly simulated by pain originating in any other abdominal organ.

In a discussion of pain in the right upper abdominal quadrant, B. H. Nichols of the Cleveland Clinic<sup>1</sup> reported last year that more than 30 per cent of their patients in whom a definite pathological condition of the right kidney was discovered, had previously undergone operations for conditions unrelated to the kidney, such as ulcer of the stomach, gallbladder disease, or appendicitis; and the subsequent histories indicated that in many of these cases the symptoms had not been relieved. J. D. Barney of Boston,<sup>2</sup> in discussing urologic causes of abdominal pain, has said that 15 to 20 per cent of patients seen by him with lesions of the kidney and ureter have

had previous operations performed for other abdominal lesions without relief. In many of these there had been little or no preoperative investigation of the urinary tract. As he says: "It is not yet fully appreciated how frequently abdominal pain may be due to some lesion of the kidney or ureter." Arthur B. Cecil<sup>3</sup> has presented some interesting groups of cases in his study of abdominal pain in diseases of the kidneys and ureters. Among sixty-seven patients with renal and ureteral calculi, thirteen had had previous operations performed; one had had three previous abdominal operations for the same symptoms. Eight other patients had escaped laparotomy, but had had diagnoses of appendicitis, gallstones, or ptomaine poisoning. There had been, therefore an error of over 30 per cent in the diagnosis of renal and ureteral calculi. Among twenty other patients suffering from hydronephrosis without stones, six had had previous operations without relief, and two others had had diagnoses of appendicitis and ptomaine poisoning respectively without operation. In that group of twenty cases the error in diagnosis had been 40 per cent.

Why should there be such a wide margin of error? In my opinion we depend too much on the character and location of pain in making a diagnosis. The abdominal organs are supplied with sympathetic and autonomic nerves which carry no fibers of pain sensation. However, stimuli from these organs travel to certain segments of the spinal cord (Fig. 1), where they are relayed to the brain, and interpreted as pain sensations from the areas of distribution of cerebrospinal nerves of the same cord segments (Fig. 2). The tenth, eleventh and twelfth dorsal and first lumbar segments receive stimuli from a majority of the organs, and the pain sensations are, of course, referred to the corresponding cerebrospinal nerve areas. Occasionally visceral stimuli reaching the cord at the normal segment are transported up or down the cord to a distant segment before being relayed to the brain; this, naturally, may complicate the clinical picture.

\*Read before the Hennepin County Medical Society, Minneapolis, May 7, 1928.

Another source of confusion lies in the close relationship between some abdominal viscera and the trunks of some cerebrospinal nerves (Fig. 3). It is easy to see that inflammatory lesions in and about those organs can extend to the nearby

few recrudescences of the pyelitis. The presence of red blood cells and pus in the preoperative urine specimen should have led to a preliminary roentgenogram and would probably have resulted in a urologic examination and not in an appendectomy.

A young man twenty years old was seized with gen-

DIAGRAM OF SPINAL CORDS OF VISCERAL ORGANS.

ORGAN	SPINAL CORD	NERVE
7	STOMACH	7-8-9
8	LIVER	8-9-10
9	PANCREAS	9-10-11
10	DUODENUM	10-11-12
11	ADRENAL	11-12
12	SPLEEN	12-13-14
13	STOMACH	13-14-15
14	DUODENUM	14-15-16
15	PANCREAS	15-16-17
16	ADRENAL	16-17-18
17	SPLEEN	17-18-19
18	STOMACH	18-19-20
19	DUODENUM	19-20-21
20	PANCREAS	20-21-22
21	ADRENAL	21-22-23
22	SPLEEN	22-23-24
23	STOMACH	23-24-25
24	DUODENUM	24-25-26
25	PANCREAS	25-26-27
26	ADRENAL	26-27-28
27	SPLEEN	27-28-29
28	STOMACH	28-29-30
29	DUODENUM	29-30-31
30	PANCREAS	30-31-32
31	ADRENAL	31-32-33
32	SPLEEN	32-33-34
33	STOMACH	33-34-35
34	DUODENUM	34-35-36
35	PANCREAS	35-36-37
36	ADRENAL	36-37-38
37	SPLEEN	37-38-39
38	STOMACH	38-39-40
39	DUODENUM	39-40-41
40	PANCREAS	40-41-42
41	ADRENAL	41-42-43
42	SPLEEN	42-43-44
43	STOMACH	43-44-45
44	DUODENUM	44-45-46
45	PANCREAS	45-46-47
46	ADRENAL	46-47-48
47	SPLEEN	47-48-49
48	STOMACH	48-49-50
49	DUODENUM	49-50-51
50	PANCREAS	50-51-52
51	ADRENAL	51-52-53
52	SPLEEN	52-53-54
53	STOMACH	53-54-55
54	DUODENUM	54-55-56
55	PANCREAS	55-56-57
56	ADRENAL	56-57-58
57	SPLEEN	57-58-59
58	STOMACH	58-59-60
59	DUODENUM	59-60-61
60	PANCREAS	60-61-62
61	ADRENAL	61-62-63
62	SPLEEN	62-63-64
63	STOMACH	63-64-65
64	DUODENUM	64-65-66
65	PANCREAS	65-66-67
66	ADRENAL	66-67-68
67	SPLEEN	67-68-69
68	STOMACH	68-69-70
69	DUODENUM	69-70-71
70	PANCREAS	70-71-72
71	ADRENAL	71-72-73
72	SPLEEN	72-73-74
73	STOMACH	73-74-75
74	DUODENUM	74-75-76
75	PANCREAS	75-76-77
76	ADRENAL	76-77-78
77	SPLEEN	77-78-79
78	STOMACH	78-79-80
79	DUODENUM	79-80-81
80	PANCREAS	80-81-82
81	ADRENAL	81-82-83
82	SPLEEN	82-83-84
83	STOMACH	83-84-85
84	DUODENUM	84-85-86
85	PANCREAS	85-86-87
86	ADRENAL	86-87-88
87	SPLEEN	87-88-89
88	STOMACH	88-89-90
89	DUODENUM	89-90-91
90	PANCREAS	90-91-92
91	ADRENAL	91-92-93
92	SPLEEN	92-93-94
93	STOMACH	93-94-95
94	DUODENUM	94-95-96
95	PANCREAS	95-96-97
96	ADRENAL	96-97-98
97	SPLEEN	97-98-99
98	STOMACH	98-99-100
99	DUODENUM	99-100-101
100	PANCREAS	100-101-102
101	ADRENAL	101-102-103
102	SPLEEN	102-103-104
103	STOMACH	103-104-105
104	DUODENUM	104-105-106
105	PANCREAS	105-106-107
106	ADRENAL	106-107-108
107	SPLEEN	107-108-109
108	STOMACH	108-109-110
109	DUODENUM	109-110-111
110	PANCREAS	110-111-112
111	ADRENAL	111-112-113
112	SPLEEN	112-113-114
113	STOMACH	113-114-115
114	DUODENUM	114-115-116
115	PANCREAS	115-116-117
116	ADRENAL	116-117-118
117	SPLEEN	117-118-119
118	STOMACH	118-119-120
119	DUODENUM	119-120-121
120	PANCREAS	120-121-122
121	ADRENAL	121-122-123
122	SPLEEN	122-123-124
123	STOMACH	123-124-125
124	DUODENUM	124-125-126
125	PANCREAS	125-126-127
126	ADRENAL	126-127-128
127	SPLEEN	127-128-129
128	STOMACH	128-129-130
129	DUODENUM	129-130-131
130	PANCREAS	130-131-132
131	ADRENAL	131-132-133
132	SPLEEN	132-133-134
133	STOMACH	133-134-135
134	DUODENUM	134-135-136
135	PANCREAS	135-136-137
136	ADRENAL	136-137-138
137	SPLEEN	137-138-139
138	STOMACH	138-139-140
139	DUODENUM	139-140-141
140	PANCREAS	140-141-142
141	ADRENAL	141-142-143
142	SPLEEN	142-143-144
143	STOMACH	143-144-145
144	DUODENUM	144-145-146
145	PANCREAS	145-146-147
146	ADRENAL	146-147-148
147	SPLEEN	147-148-149
148	STOMACH	148-149-150
149	DUODENUM	149-150-151
150	PANCREAS	150-151-152
151	ADRENAL	151-152-153
152	SPLEEN	152-153-154
153	STOMACH	153-154-155
154	DUODENUM	154-155-156
155	PANCREAS	155-156-157
156	ADRENAL	156-157-158
157	SPLEEN	157-158-159
158	STOMACH	158-159-160
159	DUODENUM	159-160-161
160	PANCREAS	160-161-162
161	ADRENAL	161-162-163
162	SPLEEN	162-163-164
163	STOMACH	163-164-165
164	DUODENUM	164-165-166
165	PANCREAS	165-166-167
166	ADRENAL	166-167-168
167	SPLEEN	167-168-169
168	STOMACH	168-169-170
169	DUODENUM	169-170-171
170	PANCREAS	170-171-172
171	ADRENAL	171-172-173
172	SPLEEN	172-173-174
173	STOMACH	173-174-175
174	DUODENUM	174-175-176
175	PANCREAS	175-176-177
176	ADRENAL	176-177-178
177	SPLEEN	177-178-179
178	STOMACH	178-179-180
179	DUODENUM	179-180-181
180	PANCREAS	180-181-182
181	ADRENAL	181-182-183
182	SPLEEN	182-183-184
183	STOMACH	183-184-185
184	DUODENUM	184-185-186
185	PANCREAS	185-186-187
186	ADRENAL	186-187-188
187	SPLEEN	187-188-189
188	STOMACH	188-189-190
189	DUODENUM	189-190-191
190	PANCREAS	190-191-192
191	ADRENAL	191-192-193
192	SPLEEN	192-193-194
193	STOMACH	193-194-195
194	DUODENUM	194-195-196
195	PANCREAS	195-196-197
196	ADRENAL	196-197-198
197	SPLEEN	197-198-199
198	STOMACH	198-199-200
199	DUODENUM	199-200-201
200	PANCREAS	200-201-202
201	ADRENAL	201-202-203
202	SPLEEN	202-203-204
203	STOMACH	203-204-205
204	DUODENUM	204-205-206
205	PANCREAS	205-206-207
206	ADRENAL	206-207-208
207	SPLEEN	207-208-209
208	STOMACH	208-209-210
209	DUODENUM	209-210-211
210	PANCREAS	210-211-212
211	ADRENAL	211-212-213
212	SPLEEN	212-213-214
213	STOMACH	213-214-215
214	DUODENUM	214-215-216
215	PANCREAS	215-216-217
216	ADRENAL	216-217-218
217	SPLEEN	217-218-219
218	STOMACH	218-219-220
219	DUODENUM	219-220-221
220	PANCREAS	220-221-222
221	ADRENAL	221-222-223
222	SPLEEN	222-223-224
223	STOMACH	223-224-225
224	DUODENUM	224-225-226
225	PANCREAS	225-226-227
226	ADRENAL	226-227-228
227	SPLEEN	227-228-229
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229	DUODENUM	229-230-231
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231	ADRENAL	231-232-233
232	SPLEEN	232-233-234
233	STOMACH	233-234-235
234	DUODENUM	234-235-236
235	PANCREAS	235-236-237
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249	DUODENUM	249-250-251
250	PANCREAS	250-251-252
251	ADRENAL	251-252-253
252	SPLEEN	252-253-254
253	STOMACH	253-254-255
254	DUODENUM	254-255-256
255	PANCREAS	255-256-257
256	ADRENAL	256-257-258
257	SPLEEN	257-258-259
258	STOMACH	258-259-260
259	DUODENUM	259-260-261
260	PANCREAS	260-261-262
261	ADRENAL	261-262-263
262	SPLEEN	262-263-264
263	STOMACH	263-264-265
264	DUODENUM	264-265-266
265	PANCREAS	265-266-267
266	ADRENAL	266-267-268
267	SPLEEN	267-268-269
268	STOMACH	268-269-270
269	DUODENUM	269-270-271
270	PANCREAS	270-271-272
271	ADRENAL	271-272-273
272	SPLEEN	272-273-274
273	STOMACH	273-274-275
274	DUODENUM	274-275-276
275	PANCREAS	275-276-277
276	ADRENAL	276-277-278
277	SPLEEN	277-278-279
278	STOMACH	278-279-280
279	DUODENUM	279-280-281
280	PANCREAS	280-281-282
281	ADRENAL	281-282-283
282	SPLEEN	282-283-284
283	STOMACH	283-284-285
284	DUODENUM	284-285-286
285	PANCREAS	285-286-287
286	ADRENAL	286-287-288
287	SPLEEN	287-288-289
288	STOMACH	288-289-290
289	DUODENUM	289-290-291
290	PANCREAS	290-291-292
291	ADRENAL	291-292-293
292	SPLEEN	292-293-294
293	STOMACH	293-294-295
294	DUODENUM	294-295-296
295	PANCREAS	295-296-297
296	ADRENAL	296-297-298
297	SPLEEN	297-298-299
298	STOMACH	298-299-300
299	DUODENUM	299-300-301
300	PANCREAS	300-301-302
301	ADRENAL	301-302-



Fig. 4

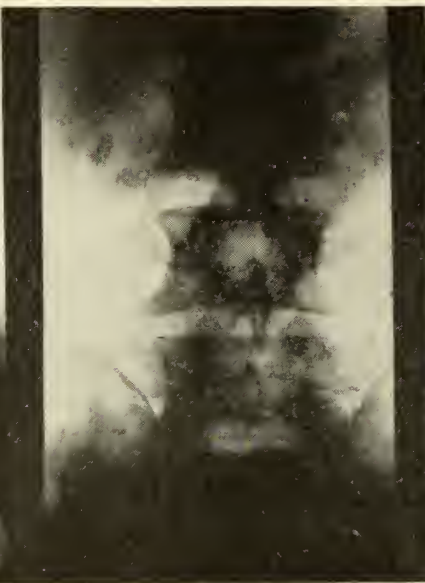


Fig. 5



Fig. 6

weeks later he had an attack of severe abdominal cramps with vomiting and diarrhea. He returned ten months later saying that intermittent attacks of pain in the right side had prevented him from working; nausea and vomiting had occurred with some attacks and hematuria once. Roentgenogram and urterogram (Figs. 5 and 6) showed a calculus blocking the right ureter, and by pyelotomy the calculus was removed. He has been very well ever since. If there was enough doubt before the first operation to warrant fluoroscopy of the colon, then a preliminary flat plate of the urinary tract should have been made.

A woman thirty years old was awakened at four A. M. by pain in the right lower quadrant and vomited. Pain continued, and in the afternoon she was sent to

us by her doctor as an acute appendicitis. There was slight relative rigidity of the right abdomen, but, when seen by us, the principal tenderness was in the right lumbar region. The temperature and pulse were normal. Cystoscopy showed subacute cystitis and right pyelitis. Pyelogram showed right hydronephrosis, and the introduction of the sodium iodide exactly reproduced the pain of her acute attack. Atropin completely relieved her repeated attacks of pain. Her doctor reports that she was well for a long time afterward until she moved away and disappeared.

A girl nineteen years old was sent to the Minneapolis General Hospital for appendectomy. She had been seized with pain in the right side of the abdomen localizing in the right lower quadrant. Nausea and



Fig. 7



Fig. 8



Fig. 9

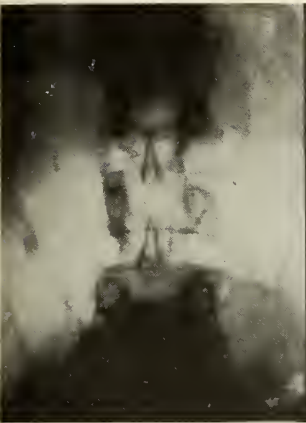


Fig. 10

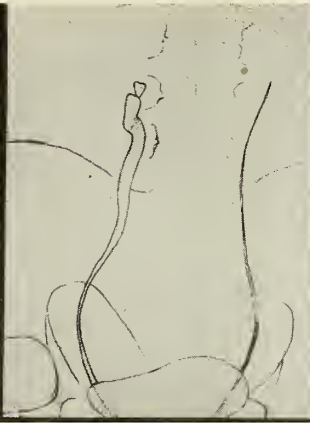


Fig. 11



Fig. 12

vomiting had occurred soon after the onset, and the pain, tenderness and slight rigidity had persisted in the right lower quadrant, leading to the diagnosis of acute appendicitis. There had been a similar attack about a year previously. In the hospital, catheterized urine showed pus and a few red blood cells; leukocyte count was 5,600. These associated findings led the surgeon to request cystoscopy. Two right ureteral orifices were seen, and the urine from both contained pus cells. Pyelograms (Figs. 7 and 8) showed complete reduplication of the right renal pelvis and ureter with hydronephrosis of both parts. Two weeks later, when pain recurred in the right lower quadrant with rigidity and tenderness, 0.25 per cent silver nitrate was instilled into both pelves of the right kidney. Almost two years later she reported that she had had no further trouble at all.

To show the reverse of the picture, I wish to mention just one case record from our Pathology

Department files at the University. The patient had sought relief for abdominal pain, but the doctor had found blood in the urine, and had treated him for a week before finally sending him to the General Hospital as an "acute abdomen." He died on admission and autopsy showed "acute gangrenous ruptured appendicitis with generalized peritonitis." The delay in this case was of course, very probably more disastrous than an unnecessary laparotomy. So much for appendicitis.

A woman 34 years old was admitted to the gynecologic service of the General Hospital as an acute salpingitis, her complaints being severe pain in the right abdomen, burning urination, and apparently vaginal discharge. Smears were negative, and pelvic examination by the visiting staff man found the uterus

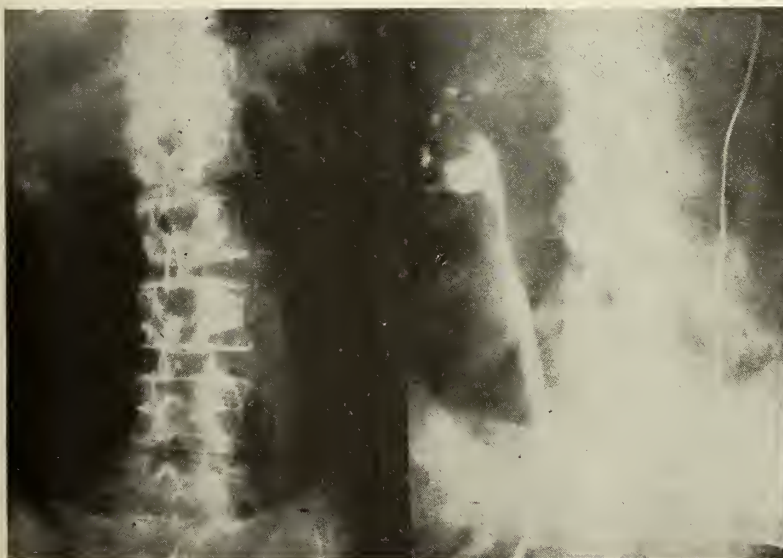


Fig. 13



Fig. 14

Fig. 15

and adnexa to be normal. A later urine specimen contained much pus, and a tender mass low in the right flank was felt to be the right kidney. Urologic examination demonstrated a ptosis and infected hydronephrosis of the right kidney (Fig. 9). A recent report says that she is doing day work in addition to her housework and has gained weight, but that she still has frequent sideaches.

The upper urinary tract must be remembered also in the diagnosis of gallbladder disease.

A woman fifty-three years old had had many severe attacks of pain in the right upper abdomen, which had always been diagnosed as cholelithiasis by different physicians and surgeons. The surgeon who saw her in the last attack made the same diagnosis and persuaded her to have an operation on her gallbladder. On admission to St. Mary's Hospital her leukocyte count was 15,000, her fever was high, and her urine contained albumin and pus. Being a cautious surgeon, he had a preliminary roentgenogram; the shadow (Fig. 10) suggested a urinary calculus, and he asked me to examine the urinary tract. Some urine was seen coming from the right ureter, but catheters could not be passed all the way to the renal pelvis. The urine contained pus. The ureterogram (Fig. 11) showed the ureter to be dilated; no sodium iodide was seen above the stone shadow. The renal function test was practically zero on the right side but was normal on the left. At operation the kidney showed extreme diffuse pyelonephritis, and the kidney and stone were removed (Fig. 12). The woman has been very well since.

A very stout woman sixty-five years old came to the General Hospital complaining of severe pain in the right upper quadrant with some radiation toward the left abdomen. She had vomited once. Examination showed muscle spasm of the whole right rectus muscle, with marked tenderness and rebound directly over the gall bladder region, and with slight tenderness at McBurney's point. The temperature was 99.2°, the pulse 100, and the leukocyte count 20,000. There was much pus in the urine but she had been treated for cystitis one year previously. The present diagnosis was cholecystitis and cholelithiasis. However, the roentgenogram (Fig. 13) showed a large irregular calcification in the right renal region and urologic examination was asked. It showed renal infection and impaired right renal function. Pyelogram (Fig. 14) showed the previously discovered calcified mass to be in the right kidney. The diagnosis was renal calculus, with tuberculosis not entirely ruled out. The patient did not relish the prospect of an operation and left the hospital against advice. She still has trouble off and on.

A girl twenty years old came to the General Hospital with severe cramp-like intermittent pain in the right upper quadrant radiating to the back between the shoulders and slightly to the right lumbar region. She had dysuria, frequency and nocturia, but they did not vary with the pain, and the first urinalysis showed only an occasional leukocyte and red blood cell. The provisional diagnosis was cholelithiasis or pyelitis. She

had had an appendectomy for "chronic appendicitis" five years previously during a somewhat similar attack. The second urinalysis found much pus in the urine. Urologic examination showed a pyelitis and ptosis of the right kidney (Fig. 15). No tubercle bacilli were found in the urine, but follow-up was advised.

My next case will illustrate the reverse difficulty.

I was asked to examine urologically a woman twenty-five years old. Pain in the right lower quadrant radiating to the vulva, and pus in the urine, with a past history of "kidney trouble on the right side two years ago, and seven to ten severe attacks in the past seventeen months" had led to the diagnosis of probable right renal disease. However, the urine obtained by urethral catheter was clear and the urologic examination gave normal findings, excepting a duplication of the renal pelvis and ureter. After further study of the gallbladder, laparotomy was performed. The gallbladder was twice its normal length, extending into the right lower quadrant, and adherent to a diseased appendix; both were covered by adherent omentum. Cholecystectomy and appendectomy gave relief.

My next case will indicate that even urologic examinations may not tell the whole story.

A woman forty-eight years old was brought to St. Mary's Hospital for a possible strangulated post operative hernia. There was a tender mass in the right upper quadrant, apparently associated with the upper end of an old right rectus scar. The scar had been left after an appendectomy and cholecystostomy performed eight years previously, the gallbladder having been drained through the upper end of a slightly extended appendectomy wound. On admission the temperature and pulse were normal, the leukocyte count 12,000, and the urine normal. We decided that the mass was inside the abdomen and probably an enlarged gallbladder with cystic duct stone. However, the preliminary roentgenogram (Fig. 16) showed no gallstones, but a large right kidney, and a shadow suggestive of a stone in the lower right ureter. Urologic study proved the presence of the ureteral stone quite definitely (Figs. 17 and 18). However, at about that time the pain ceased, the mass felt anteriorly receded rapidly, being evidently in front of the kidney, and the patient became temporarily jaundiced. Cholecystectomy was performed; there was a subacute interstitial cholecystitis and the gallbladder was filled with small stones; it was adherent to the surrounding organs and to the upper end of the old abdominal scar. The patient seems quite well now. Perhaps we shall hear more of the "ureteral stone" later. It is granted that in cases such as this last one the making of a complete diagnosis may be difficult.

But why are there so many inaccurate and incomplete diagnoses, leading to ineffectual operations and expensive periods of futile medical treatment? In the first place we fail to develop the art of medicine to the fullest degree; the elicitation of the details regarding the character



Fig. 16

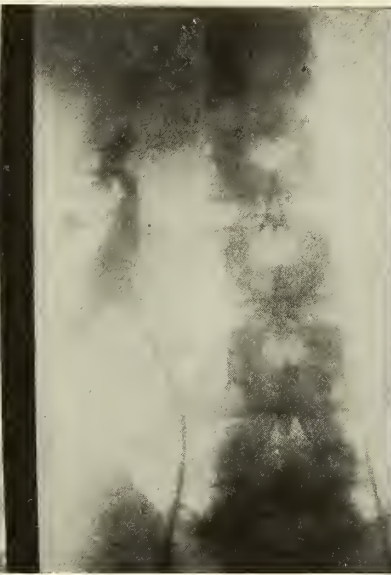


Fig. 17



Fig. 18

and radiation of pain, and the details of the present and past history; the systematic consideration of symptoms referable to the various organs; the careful physical examination including rectal and vaginal examinations; the sorting of facts and diagnosis by elimination. We place too much dependence on pain as a symptom; pain is never absolutely pathognomic of any disease. In the second place we fail to make the most of the science of medicine, the methods and instruments of precision, examinations of the blood and urine, roentgenography, cystoscopy, urography. The value of the urologic findings is great, even as negative evidence.

The errors of diagnosis by complete urologic methods are few, while the errors of diagnosis in acute abdominal disease as a whole are numerous, with correspondingly high mortality and morbidity. We or the family may hesitate to have special examinations because of the added expense, but we must recognize that failure to make a complete and accurate diagnosis may sentence the patient to larger expenses later for further hospitalization and treatment, to say nothing of the possibility of heavy funeral expenses.

In cities and in large hospitals the aid of the roentgenologist and urologist should be freely asked and promptly given. As a rule, no pa-

tient should undergo an exploratory laparotomy until at least an attempt has been made to rule out lesions of the upper urinary tract.

On the other hand, in the presence of abdominal emergencies we must remember that prolonged delay may sometimes be more dangerous than operation without an absolutely accurate diagnosis. Clinical judgment may demand an exploration rather than a delay to obtain a distant urologist, but in these days it must be possible in most places to obtain at least a simple roentgenogram of the entire urinary tract on slight indication and without delay.

823 Nicollet Ave.

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# MATERNAL, FETAL AND NEONATAL MORTALITY IN MINNESOTA\*

LEE MONROE MILES, S.B., M.D., F.A.C.S.

*Saint Paul*

POPULAR conception of the dangers involved in child-bearing is reflected in current fiction. It seems to be a prerequisite to a modern story that the hero or the heroine or both be left motherless from birth, the mother having "gone into the Valley of the Shadow" never to return. Whether or not this sacrifice of the mother imparted the characteristics necessary for the newborn child to become a hero or heroine is not stated but there is a very general impression that the risks of motherhood are very great.

Few doctors and fewer non-medical people ever read and digest the mortality tables published annually by the United States Bureau of the Census nor even the figures on vital statistics published by their own state or city. This paper is submitted for the purpose of analyzing the risk to both mother and child in our own community and to submit possible ways and means by which this very definite hazard may be reduced. It is not intended as an official report. The figures on which this study is based were obtained from official sources but in certain instances it has been desirable to deviate from the official interpretation.

With the great advances in medical science made in the last few years it should be expected that the dangers of motherhood would have been reduced in the same proportion that the danger from other morbid conditions has been decreased. That such is not the case is shown graphically in Figure 1, compiled from the figures of the State Health Department covering a period of thirteen years. This shows that the maternal death rate from strictly puerperal causes in the State of Minnesota has fluctuated from year to year but has not at any time shown a marked improvement nor a steady downward trend. The average death rate of 5.24 mothers per 1,000 living births over a thirteen year period indicates that there is a very definite risk to the prospective mother, though the occurrence of one ma-

ternal death for each 190 living children born is perhaps a too frequent happening to warrant its being made the basis of so much fiction.

The fact that there has been no marked improvement in maternal mortality in the past thirteen years in Minnesota indicates either that medical science has done all it can do and that this figure represents the irreducible minimum or it indicates that the medical profession is not giving the expectant and parturient mother the care that she should expect and have given her. Further analysis of available statistics points to the latter as the cause of the prevailing high mortality.

TABLE 1  
Maternal Mortality  
State of Minnesota, 1927

Total living births.....	50,789
Total number of mothers dying in pregnancy or labor.....	240
Total number of mothers dying of puerperal causes .....	217
Maternal death rate from puerperal causes per 1,000 living births.....	4.27
Causes of death:	
Sepsis—puerperal infection.....	57
Abortion .....	37
Eclampsia (convulsions of pregnancy).....	27
Toxemia of pregnancy.....	18
Embolism (probably sepsis).....	13
Pernicious vomiting of pregnancy.....	12
Postpartum hemorrhage.....	10
Ectopic pregnancy.....	10
Cardiac failure.....	11
Pneumonia and respiratory infections.....	12
Placenta previa.....	5
Premature separation of placenta.....	4
Miscellaneous .....	24
	240
Excluding deaths from ectopic pregnancy, abortion and non-puerperal causes—	
Total maternal deaths attributable to natural puerperal causes .....	170
Maternal death rate per 1,000 living births....	3.34

In Table 1 we see that there were 50,789 living births recorded in the State of Minnesota in 1927. Of the women in the state subjected

\*Read before the Saint Paul Obstetrical and Gynecological Society.

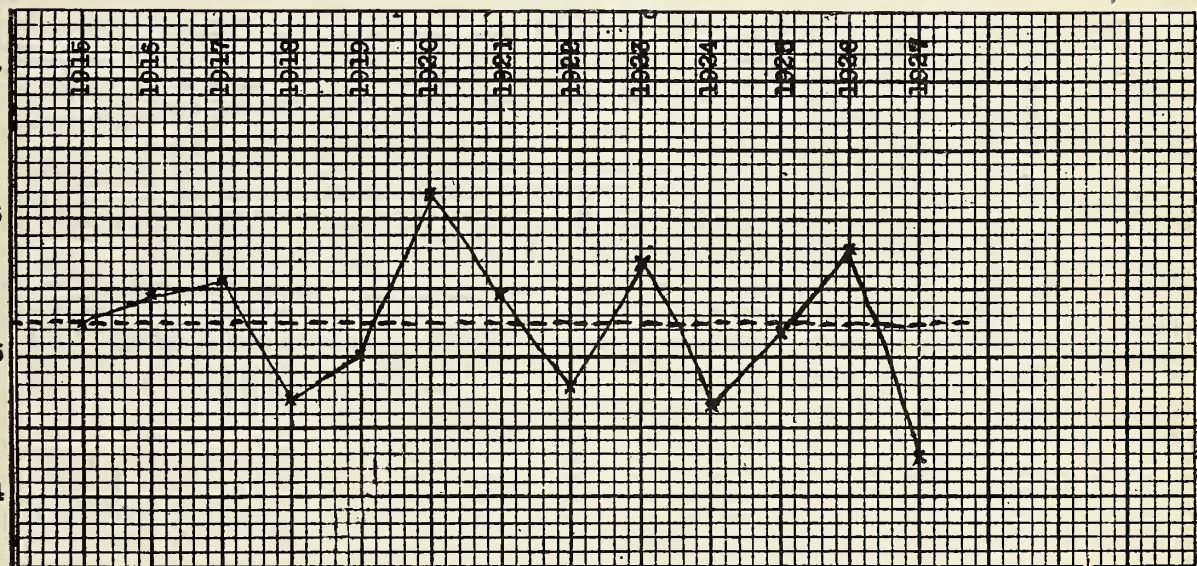
to the risks of pregnancy and labor 240 died. Of these 240 women dying in pregnancy or labor 217 died of causes directly attributable to pregnancy or labor, making a maternal death rate of 4.27 per 1,000 living births. The other thirty-three women dying in pregnancy or labor died of causes not directly related to childbearing, such as: tuberculosis, pneumonia, influenza, renal and cardiac disease. Pregnancy and labor was, in these cases, a complicating factor rather than the exciting cause of death but undoubtedly the added strain of pregnancy or labor affected the prognosis of the pre-existing or concurrent disease unfavorably.

It will be noted that thirty-seven women died of or following abortion. These cases were classified as: spontaneous, self-induced, criminal-

in estimating the actual risk of pregnancy and labor. The revised death rate from strictly puerperal causes excluding deaths from abortion and ectopic pregnancy then appears as 3.34 per 1,000 living births. This figure represents a still rather high maternal mortality because of the high number of stillbirths. The error due to not including stillbirths is partially offset by the fact that multiple pregnancies are also not counted so that the probable error in accepting 3.34 as the maternal death rate is not great.

In Figure 2 we see graphically the fetal and neonatal mortality in the State of Minnesota for the last eight years. The neonatal period is usually interpreted as the first fourteen days after birth, but figures were available for only the first week of life, hence the average mor-

Maternal Mortality, State of Minnesota  
Per 1,000 Living Births



Maternal deaths in this table include only those directly attributable to puerperal causes. Average maternal death rate per 1,000 living births over this 13 year period is 5.24. One woman of each 190 dies as a result of pregnancy or labor.

Fig. 1

ly induced and therapeutic. Of the thirty-seven deaths only one followed therapeutic abortion, all the others being spontaneous or otherwise induced. Ten women died following ectopic pregnancy. Since no figures are available showing the total number of abortions not resulting in death nor of the total number of women recovering from ectopic pregnancy under proper treatment it seems only fair to exclude these figures

tality of 57.5 per 1,000 is lower than it should be for the fourteen-day neonatal period. Here again we see no marked improvement in mortality for the period included in this report. The principal causes of fetal and neonatal deaths are, in order of importance: prematurity, cerebral hemorrhage due to birth trauma, toxemia of the mother, or other accidents of pregnancy or labor. In 1927 there were 52,299 births recorded in

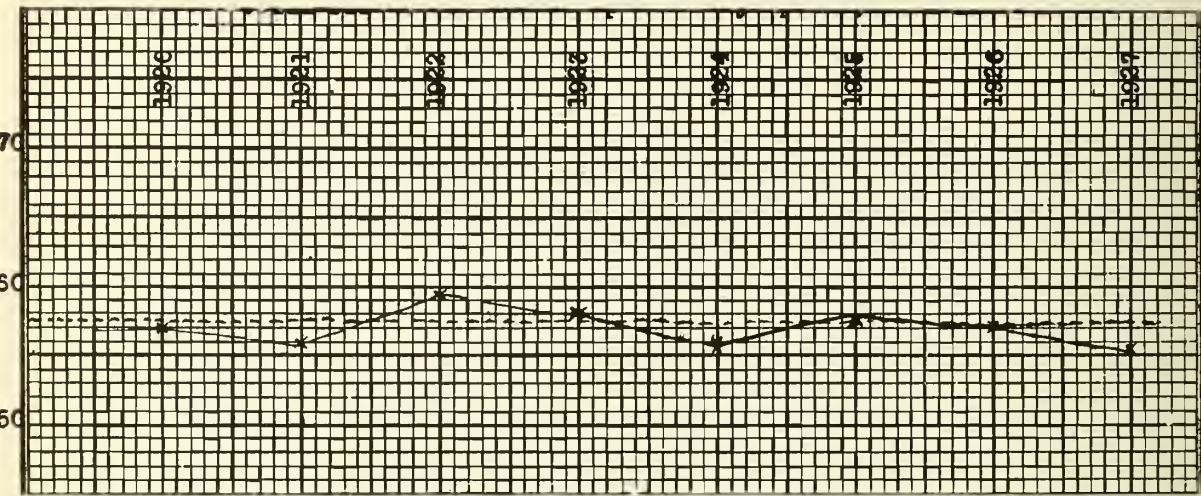
Minnesota, of which there were 1,510 stillbirths and 1,411 deaths from birth up to the seventh day, making a total mortality of 55.8 per 1,000.

It is impossible to evaluate these figures obtained from the state at large as to the influence of treatment on maternal and fetal mortality. A questionnaire was, therefore, sent out to nine of the larger hospitals in Saint Paul asking for similar figures. All nine hospitals responded with complete statistics on the number of mothers delivered, maternal deaths from puerperal causes, number of babies born and fetal and neonatal deaths up to the time the mother was dis-

six hospitals were classified as Group I because 75 per cent or more of pregnant and parturient women were cared for by physicians not specializing in nor limiting their practice to obstetrics; three hospitals were placed in Group II because 75 per cent or more of pregnant and parturient women were cared for by physicians who either do specialize in or limit their practice to obstetrics.

The maternal death rate of 3.34 (Table 1) for the state as compared with the death rate of 3.00 for the city would seem to indicate that the women of the city receive better obstetrical care

Fetal and Neonatal Mortality, State of Minnesota  
Stillbirths and deaths up to 7 days per 1,000 births



Average death rate for 8 years is 57.5 per 1,000 registered births  
One baby of each 17.4 births is either stillborn or dies in 7 days or less

Fig. 2

charged from the hospital—on the average about eleven days after birth. These figures covered the three years 1925, 1926 and 1927. Statistics were also obtained from the Department of Health of the City of Saint Paul for the same three years. Table 2 is a compilation of these statistics.

At this point it must be emphasized that the mortalities reported in this table are *not* hospital mortalities but are *physicians'* mortalities. The hospitals reporting these figures are all registered under the American College of Surgeons and are all above question as far as hospital technic is concerned. The deaths reported should then be charged to the *medical attendants*. These nine hospitals were further divided into two classes:

than the women of the state as a whole. As pointed out previously the figures for the state are based on the rate per 1,000 living births, whereas the city figures are based on the rate per 1,000 women cared for, hence the fraction of difference in favor of the city mothers. If figures were available from the state as a whole it would be apparent that the mothers of Saint Paul receive on the whole no better obstetrical care than those in the rural districts.

The higher maternal death rate in the nine hospitals (3.23) than in the city as a whole (3.00) would seem to indicate that home delivery and care was superior to care in a well organized hospital. Such a conclusion would be absurd. The apparent discrepancy is explained

TABLE 2

## Maternal Mortality

City of Saint Paul, 1925, 1926, 1927

Total number of women delivered.....	16,647
Women dying of puerperal causes excluding abortion and ectopic pregnancy.....	50
Maternal death rate per 1,000 mothers.....	3.00
One mother of every 333 died of strictly puerperal causes.	
Nine hospitals delivered a total number of women .....	11,112
Nine hospitals had a total number of maternal deaths .....	36
Hospital maternal death rate per 1,000 mothers .....	3.23
Group I, six hospitals, 75 per cent or more labors conducted by physicians not specializing in obstetrics—	
Total deliveries.....	5,290
Maternal deaths.....	22
Maternal death rate per 1,000 mothers.....	4.16
Group II, three hospitals, 75 per cent or more labors conducted by physicians specializing in obstetrics—	
Total deliveries.....	5,822
Maternal deaths.....	14
Maternal death rate per 1,000 mothers.....	2.40
Causes of death ascribed in the 50 cases reported to the City Health Department—	
Sepsis (puerperal infection).....	15
Toxemia and eclampsia.....	14
Postpartum hemorrhage.....	4
Accident of labor.....	2
Cesarean section and obstructed labor.....	2
Other accidents of pregnancy.....	13

by the fact that serious or complicated cases are cared for in the hospitals. Frequently complications arise in attempted deliveries at home that would be avoided in an institution, nevertheless the medical attendant in the hospital is forced to accept the responsibility and the unfavorable outcome of the case is charged to his account.

In Table 3 the statistics of fetal and neonatal deaths in Saint Paul are presented under the same classification as used in Table 2. Here it will be noted that the infant's chances are greatly enhanced by hospital care, the average mortality in hospitals being lower than the average for the entire city. The higher death rate seen in Group II is accounted for because one of the hospitals in this group is the City and County Hospital in which there is an inordinately high mortality due to the fact that less than half of the women receive antenatal care and complications frequently arise that lessen the infant's chances before the mother arrives at the hospital.

TABLE 3

## Fetal and Neonatal Mortality

City of Saint Paul, 1925, 1926, 1927

Total births recorded City of Saint Paul.....	17,022
Stillbirths .....	572
Neonatal deaths .....	488
Total deaths.....	1,060
Fetal and neonatal death rate per 1,000 births....	62.2
Nine hospitals, total births.....	11,315
Stillbirths .....	332
Neonatal deaths .....	315
Total deaths.....	647
Fetal and neonatal death rate per 1,000 births....	57.1
Group I, six hospitals, 75 per cent or more labors conducted by physicians not specializing in obstetrics—	
Total births .....	5,330
Stillbirths .....	144
Neonatal deaths .....	133
Total deaths .....	277
Fetal and neonatal death rate per 1,000 births .....	51.9
Group II, three hospitals, 75 per cent or more labors conducted by physicians specializing in obstetrics—	
Total births .....	5,985
Stillbirths .....	188
Neonatal deaths .....	182
Total deaths .....	270
Fetal and neonatal death rate per 1,000 births .....	61.8

Can this loss of life of mothers and children be prevented?

A study of Table 1 shows that sepsis (puerperal infection) leads all other causes of maternal deaths in frequency, with eclampsia, toxemia of pregnancy, toxic vomiting of pregnancy, and hemorrhage from all causes following in the order named. Proper antenatal care would certainly greatly reduce the number of cases of eclampsia and toxemia and proper treatment promptly instituted would further reduce the mortality in cases in which the toxic condition has actually occurred. By proper care at the time of delivery on the part of the attending physician sepsis could be almost eliminated except for a few rare cases of autoinfection. If the attending physician is prepared for emergencies, hemorrhage from any cause should only very rarely result in the death of a mother. There seems to be the all too prevailing idea that labor is always a normal process and no preparation is made to meet any emergency until after the emergency has arisen, when, in the case of hemorrhage, it is often too late.

From the standpoint of the welfare of the infant, proper antenatal care of the mother can

not be too greatly emphasized. Antenatal care is really care of two patients instead of the mother alone. Premature birth, with its great danger to the infant, and death of the fetus before birth are frequently consequent on toxemia of the mother. By treating the toxemia or by preventing it a large number of infants could be saved. Another large number of infants are stillborn or die in the neonatal period as a result of injury at birth. This birth trauma was formerly ascribed to the use of obstetrical forceps but is now recognized as being due to too forceful, too prolonged or obstructed labor more frequently than to the use of forceps. In fact judicious and skillful application of forceps to assist in the birth of the child will actually prevent the trauma to the child that was formerly charged to the forceps.

In a report published recently Dunne\* shows what may be done in a hospital service to reduce maternal and infant mortality. This report covers 1,992 consecutive deliveries, 87 per cent of which were conducted by men limiting themselves to obstetrics and gynecology. Nearly all of the patients had received skilled antenatal care. The 1,992 mothers were delivered with only four maternal deaths or a death rate of only two per 1,000 mothers delivered. There were 2,022 chil-

dren born, sixty-seven stillbirths, and seventeen neonatal deaths, making a total of eighty-four deaths or 41.0 per 1,000 births. In this series a total of 32.5 per cent of deliveries were effected by operative intervention, forceps being applied in 25 per cent of all cases. The results of antenatal care and proper intervention are shown by the extremely low maternal and fetal mortality rates.

The desired end-results of a pregnancy are a living mother, not impaired by the processes of pregnancy and labor, and a living, healthy child. Neglect of either of the two patients results in an obstetrical tragedy. Certainly not one woman out of every 190 who give birth to a baby should be sacrificed and it is equally true that having gone through with a pregnancy not one mother out of every 17.4 should be deprived of a living baby. The only way of accomplishing the desired result lies in giving the expectant mother better care in the antenatal period and through better and more skillful attendance on the mother and baby in labor and during the neonatal period.

My thanks are hereby extended to the superintendents and statisticians of the hospitals of Saint Paul who cooperated with me in making this report possible, and also to the statisticians of the City Health and State Health Departments who gave aid in compiling these statistics.

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\*Dunne, Gerald P.: Hospital record over a six year period. Minn. Med., January 1928, 43.

### ECLO TABLETS

Eclo Tablets were found unacceptable for New and Non-official Remedies because it was an unoriginal preparation marketed under a proprietary nondescriptive name; because it was marketed with unwarranted claims; and because its vitamin A content was not sufficiently high to warrant recognition. When the Council's observations were submitted to the proprietors, the Pitman-Moore Co., the firm replied that the sale of this product had been discontinued and that another product prepared by a different process was being marketed. The Pitman-Moore Co. has not submitted information in regard to the new product to the Council and the Council has made no examination of it. (Jour. A. M. A., August 18, 1928, p. 515.)

### DANGERS OF LARGE DOSES OF ACETYLSALICYLIC ACID

If large doses of acetylsalicylic acid are to be administered, the urine would have to be watched for evidence of kidney irritation, as albuminuria, hematuria and even actual nephritis may be produced. If albuminuria is present previous to the administration, an increase in the nonprotein blood nitrogen and a lessening in the phenolsulphonphthalein output must be guarded against. Any form of skin eruption, itching, or any degree of gastric irritation would call for reconsideration of such dosage. Also tinnitus and other impairment of nerve function need to be looked for. (Jour. A. M. A., August 4, 1928, p. 344.)

## THE PHYSICIAN AND THE SANATORIUM\*

S. A. SLATER, M.D.

Superintendent Southwestern Minnesota Sanatorium  
*Worthington, Minnesota*

AS progressive physicians I am certain you are interested in lowering the death rate from tuberculosis and if possible stamping out this disease that takes such a frightful toll of useful lives each year. One should feel encouraged by the fact that the death rate has been cut in half in the last quarter century; but in spite of these encouraging results, we should not lessen our efforts, for yet there is much to accomplish. The continued success along this line will depend on the coöperation of the physician with other agencies at our command, which is my reason for choosing the above subject. The physician is the foundation upon which the fight is to be waged against tuberculosis; the sanatorium cannot do its part without the proper support. It is therefore important that both fill their place and do their duty by coöperating, otherwise the efforts will be fruitless and results will not be obtained.

It is not my purpose to discuss relations that have existed in the past between the sanatorium and the physician (for, if I did, both might come in for criticism) but rather to outline the part that may be played by each and what might be accomplished with the proper coöperation of the two. Each can be a great help to the other and render greater service in helping to reduce the number of deaths from tuberculosis. These two agencies are the most important factors in taking care of the tuberculous. Each needs the other to render the greater service possible and for this reason it is of the utmost importance that their work be in harmony. In order to obtain the best results in the prevention and treatment of tuberculosis it is necessary to carry on an educational campaign to interest the patient and the public. The proper care and instruction of the patient is highly important but hard to obtain at home or in places not suited for such treatment and instruction. It is therefore necessary that some place be provided where the proper care and instruction can be carried out to render the greatest

service to the patient and the public. This is the properly conducted sanatorium and while it does not mean that all patients should be cared for in such institutions regardless of condition it will give the greatest benefit to the greatest number.

It is the physician's duty to be on the lookout for tuberculosis and do all in his power to discover the disease as early as possible. This not only gives the patient the best chance to recover but also protects those with whom he associates from the danger of infection. It is also the duty of the physician to give the proper treatment or see that he gets it and that the members of the family and community are protected. This makes it necessary for him to be familiar with the disease so that he will be in a position to give the proper advice and treatment. If the patient is to be admitted to a sanatorium, he should be familiar with the institution and be able to give the patient advice and information regarding the institution he is recommending. He should not be satisfied to give advice such as "you need a change of climate" or "you should enter some sanatorium." Be specific. A change of climate will not begin to play as important a part in the patient's recovery as the proper treatment will in the poorest climate. In advising a change of climate this should be borne in mind and the patients should be told frankly by the physician that he recommends such and such a climate for his case (if such is necessary) but that it should not be depended on alone, for proper care is also necessary. The same is true about advising a sanatorium. He should be familiar with the methods of the institution he is recommending and give the patient an idea of what he might expect on entering it. The sanatorium will not benefit a patient if he is unwilling to coöperate and do his part. If he comes with the impression that it will be necessary to stay only a short time to recover, he will likely become discontented and indifferent to treatment when he knows the nature of the disease and how long it will take to bring about a permanent improvement. These are most important for the

\*Read before the Southern Minnesota Medical Association, Austin, Minn., Sept. 30, 1927.

physician to know and be in a position to use when advising what to do or where to go. Many patients will have to be taken care of in the home and for this reason it is important that the advantages and disadvantages of home treatment be placed fairly and emphatically before them. Their coöperation will have to be obtained if results are to be expected.

When the patient has been sent away for treatment, whether only for a change of climate, to some resort, or to a sanatorium, the physician should not feel that his duties are ended, for if the patient improves he will no doubt return home and should again be under the care of his physician. He should not feel that he is getting rid of a patient when he sends him away but should keep in touch with the progress of his condition and still be in a position to render a service to the patient after he returns home. Regardless of what the apparent condition may be, it takes years after a patient returns to normal life before he should feel that he does not need the services of a physician, and this is the time when the home physician can render a most valuable service and frequently prevent a future breakdown. This I believe should convince you of the important position you hold. You are the guiding influence from the time the diagnosis is made through the rest of the life of the patient. It is important that this be appreciated, otherwise the service rendered will be wasted.

The sanatorium, like the physician, is limited in its possibilities when working alone and unsupported. Having the proper coöperation and support of the physicians and other useful agents, it can render a most valuable aid in reducing the death rate from tuberculosis. The properly conducted sanatorium offers the patient afflicted with tuberculosis the best chance to regain his health. It is practically impossible to get a patient to do what is necessary in the home to gain permanent results, for as soon as his symptoms subside he feels that he is able to do things he shouldn't and often with disastrous results. The sanatorium impresses upon him the necessity of doing certain things to recover and he finds it much easier living the mode of life necessary to recover in the sanatorium, for he is living in an environment where everyone else is doing practically the same thing. This is different in the home, for

there those he associates with are living normal lives and he cannot follow them and improve. The sanatorium not only gives the patient the best chance possible to recover but also impresses upon him the seriousness of his disease and how highly important it is that he should live the proper life over a long period after returning home. This is highly important, for, unless the patient is impressed with the fact, he will not take care of himself after symptoms subside and will most likely have a relapse sooner or later.

The sanatorium can play a far more important part in the campaign against tuberculosis than the actual care of patients within its walls. The institution which stops here is not rendering the service it should to the community. The people of the community should be educated regarding tuberculosis. Clinics should be conducted by the staff of the sanatorium to discover cases of tuberculosis which would otherwise not consult physicians until they had become far advanced. By means of clinics the members of families of patients in the sanatorium and ex-sanatorium patients can be examined to discover the presence of early or suspicious cases. These can be properly advised and this may prevent a future breakdown. The coöperation of the family physician is needed in this, for many cases are referred from clinics to him for observation and guidance. This will avoid many breakdowns and thus prevent much suffering and great loss from a financial standpoint. Contrary to the opinion of some who may be selfishly inclined, the activity of a sanatorium in conducting clinics and trying to educate the public is not for the purpose of obtaining patients for the institution but rather to prevent the disease from developing to the point where sanatorium care may be necessary. It costs much to care for a patient in an institution until he recovers, and for this reason the sanatorium and physicians should try to avoid breakdowns, for every time one is prevented it saves much financially and protects society. The physician should not look upon the sanatorium as a competitor, for each can render a service to the other. The mutual coöperation will bring results that cannot be obtained in any other way and will accomplish much in the fight against tuberculosis, thus rendering a real service to humanity.

## MEDICAL HEALTH ECONOMICS\*

ROBERT O. JONES

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*Chicago, Illinois*

**M**R. President and Members of the House of Delegates: I appreciate this opportunity as a layman of being permitted to appear before this progressive group and discuss certain issues relating to the economics of medicine.

I will qualify as a witness by saying that while I am not a physician and have not a medical education, yet for the last ten years I have been very closely identified with medical matters; two terms as Secretary of State of Idaho and four years Medical Enforcement Officer of that state, and later being for five years Executive Director for the Public Health League of Washington at Seattle. For the past eight months I have been Associate Director of the Gorgas Memorial Institute.

I feel I have had experience which would justify me in offering observations at a meeting of this character in relation to medical organization. To me it seems that a great many changes have come about in this country in the last thirty or forty years so far as the practice of medicine is concerned. Certainly, the family physician does not stand on the 100 per cent plane that he did thirty or forty years ago. In the old days his leadership, particularly along health lines, was unassailable. It would have been heresy to reach any other conclusion as to his standing and prestige then.

Today we find that medicine, of course, is rendering a greater service to the people than it did thirty or forty years ago and is more scientific now than it was in that era and age. Yet a large part of the people in our country are dead set against it! Quackery has been sweeping over this country from the Atlantic to the Pacific during the last ten or fifteen years. We find states are licensing men who are permitted to call themselves doctors, which means that the state is underwriting this type of quackery for its own people. These various groups are supposed to be limited in practice, yet they take the liberty in the various communities of this state and of

the nation of carrying on general medical practice.

We find that these cults with their fifty-seven varieties are leading in the attack on the medical profession with its standards and ideals. We find organizations are formed in the United States which are continually fighting medicine; your anti-vaccination group and the anti-vivisection society are well organized and with their finances are carrying on a great campaign throughout the United States.

Then we have another national organization called the American Medical Liberty League which is sponsored by the "medical haters," well financed and extending its organization power into every community in the United States as far as their funds will permit.

We know, too, as we make a survey of the situation that quackery always seeks the path of least resistance. Therefore, we have been faced with a continual attack at the meetings of our legislatures, the attempt being made to get licenses for various cults, makes and kinds of healers, allowing them to call themselves doctors, and, through possibly a lack of law enforcement policies, of carrying on general medical practice.

Many different types of legislative enactments have been proposed in various states of the union, all of them designed to cripple scientific medicine. One of these measures, which has attracted some attention in the various states, would establish the "open door" policy for hospitals, making it necessary for any hospital to open its doors to any type of healer who desires to practice in it.

We had such a measure introduced in the Washington Legislature last year, which provided if a patient came into one of the hospitals and rang for the superintendent of that institution and demanded that his "family" chiropractor be admitted, all hospital procedures and all laboratory equipment should be made available to this practitioner. A means, if you please, of attacking scientific medical practice, and breaking down hospital standardization in this country!

\*Address before the House of Delegates of the Minnesota State Medical Association, Minneapolis, Minn., June 11, 1928.

We have found there is gross indifference on the part of the public to many of these great problems of medicine. Then, as a result, we note that some of the political forces are inclined to vote against plans which are presented in the interest of better medical standards.

What is the cause of this situation and what should we do about it? I am always reminded of the story of Rastus in Alabama who, half asleep, was fishing on the banks of the river. A fish came along and grabbed his hook and rushed down the stream dragging the darky down the stream and up again, then throwing him on a mud bank. Rastus got up, scratched his head, shook the mud and water off his face and said, "Ah wonder what am goin' on heah? Am dis heah niggah fishin' or dis heah fish a niggerin'?"

I think we might well consider, as we study the economics of scientific medicine, whether medicine is going or coming so far as these issues are concerned. It is my opinion and I speak with a good deal of diffidence, being only a layman, that possibly the medical profession has been too much of a four-wall profession. We have hugged too closely to our office practice. We have been concerned with the technical side of medicine and have been unconcerned, it seems to me to an extent at least, in those currents and cross currents which have been sweeping past our office doors. In this publicity and organization age we have stayed too far back on the sidelines while the parade has been going by. So it seems necessary to do something if medicine is to render a full and complete and one hundred per cent service to people; if it is to fully occupy its field and properly utilize its organization and educational powers.

Of course, I would not recommend, even as a layman, any deviation from the ethics of the great medical profession because it has been a balance wheel, it seems to me, in organized medicine and it has worked out wonderfully so far as the health and lives of people are concerned. We do need, however, to step out as far as we can in an ethical way to tell the story of medicine and assert the leadership of the profession before the people of the United States.

As medicine has changed, as you might say, from a prescription profession to an advice profession, its intangibles have been increased. There has been a great deal said in the last few years about the periodic health examination.

Such examinations as that add to the intangibility of medicine, being largely in the field of prevention. When you increase the intangibility of this profession or of any profession, the necessity of aggressive work to establish its leadership and power to an extent is increased.

In business, by ordinary estimates, you cannot be considered successfully operating, if on a sixty per cent basis. Most business organizations in this country, if they are operating on a sixty per cent of their capacity and probably losing a little bit as years roll on, would close down. When we study the question so far as scientific medicine is concerned, we find that probably forty per cent of the population of this country have either grown grossly indifferent to its utility or have become cult-shoppers. Of the other sixty per cent probably twenty per cent are either getting free medical treatment or are not paying their bills. Medicine in the United States I say is operating on a fifty or sixty per cent basis, when its useful, potential capacity is reckoned.

The necessity of some campaign, some method, some assertion of leadership, some educational policy in this country to reclaim the forty per cent, and to energize the sixty per cent, giving better support to scientific medicine must be apparent to those who have given some consideration to these questions of health economics.

Behind it all is, of course, the necessity of developing great policies of education in this country, of proceeding with medical organization to the *n*th power, doing all we can to sell and tell this story of scientific medicine to the American people.

A good many plans have been tried by the various states in an effort—groping along through these questions of health economics—to establish policies which will work better to the advantage of the public.

I want to call your attention, for a few minutes, to our experience in the State of Washington. I refer to Washington because it was my opportunity to serve the medical profession there, during a period of five or six years. Furthermore, I call your attention to Washington state because, fundamentally, the Washington plan is somewhat similar to the one you are using in the state of Minnesota.

In 1921 we found, so far as the state of Washington was concerned, that medicine had apparently been asleep in its educational and in

its organization plan. We found, among other things, if you would examine that period, that medicine was being opposed by labor on the basis of socialized medicine. We found in the 1919 Legislature that a series of devastating bills were passed attacking and crippling medical standards and shaking the foundations of public health in that state. We found that the osteopaths were given the right to call themselves surgeons, and chiropractors given the right to call themselves doctors. We found another group not recognized in the state of Minnesota for a license, called the sanipractors, sometimes called naturopaths, were licensed to practice in the state of Washington at the 1919 Session.

During the wave of quackery which swept over the Legislature in 1919, the Legislature provided that any other group, any other system of cultism, any other unit of people coming out of a blacksmith shop, or elsewhere, having fifty members, could be admitted to practice medicine in the state of Washington without the formality of appearing before the Legislature for legislative endorsement! I call this to your attention to show how far quackery had gone in that particular state in the absence of educational organization on the part of the medical profession.

We found in 1921 that the pharmacists and doctors were fighting it out on the question of bootlegging of remedies for venereal disease. In other words, pharmacy, which should be an ally to medicine, was opposed on the issue of the treatment of this type of disease. As far as the dentists were concerned, we found them indifferent to medicine and not sufficiently interested in any of these plans relating to the standardization of medical practice. So, medicine in Washington state a few years ago stood absolutely alone, harassed by enemies on all sides and terribly discouraged by the gross indifference of the people of Washington as to its problems.

That is a bird's-eye view of the quackery load in one state and it is representative of the conditions in many states of the Union. Some of the leading physicians under the auspices of the Washington State Medical Association, as a result of this sad affair, met in a conference in Seattle and established the Public Health League of Washington. They said, "We are going about this task of organization; we are going to spend our money where money can be properly spent; we are going to carry on a high grade educational

plan; we are going to use the weapons of publicity where we can in an effort to restore medicine in Washington to the full confidence and respect of the people."

They organized the Public Health League of Washington, which I think is in a way comparable to the Public Relations Committee of the Minnesota State Medical Association. They provided funds of about \$15,000 a year and said it was their purpose to spend this for educational policies. The League provided machinery whereby they could bring in the dentists, pharmacists, and nurses, and could accommodate themselves to public support in the State of Washington. In other words, through the operation and establishment of the Public Health League of Washington they recognized that the public must play an important part in so far as medical policies are concerned; that the public must assume some responsibility in these protecting policies which relate to medical standards.

They had the various groups at a very important conference held in Seattle. They called in the pharmacists who had been opposing medicine. They will always at least be indifferent unless you have some machinery or some means of comradeship and co-operation between that group and medicine. They called in the dentists, pharmacists, nurses, and representative laymen and had an epoch-making conference.

They established there as a means of co-operation and comradeship a unity of purpose. So far as medicine is concerned, as well as pharmacy, dentistry, nursing and the laity as well, out of that organization of co-operation and comradeship came a new health era in Washington.

They went about this task of organizing, politically. Up to that time they had always laughed at the proposition that any physician should have anything to do with political machinery or political organizations, but they decided in Washington state that they were no longer going to be "too proud to fight." It was not a question of more politics in health, rather one of more health in politics. They decided it was important that they organize along political lines too, in order that they might properly protect medical standards and thereby give added protection to the lives of the people.

They went about this task of organization and began to organize against the so-called "medical haters." Every state in the union has legislators,

sometimes referred to as "medical haters," who are absolutely opposed to scientific medicine where health issues are concerned. Such an anti-health group is more dangerous to your state, more dangerous to the people of Minnesota, than any great epidemic that may sweep within your borders!

They went about the task of fighting these medical bandits, eliminating them as far as possible from the councils of legislative machinery in an effort to protect the standards of scientific medicine and the health and lives of the people.

It is a peculiar thing that, as you study medicine in its legislative aspects, you find anti-medical members of the legislature in the House and Senate from districts where medical organization is at low ebb: in other words, from a district or county where medicine is not thoroughly organized, where medical unity is below par, and progressive educational policies are not in evidence. I want to tell you, you are going to reap the harvest by having men in the legislature from such a county who are always opposed to medical policies.

We had such a district in the state of Washington. We had one of the largest cities of our state, a city of about 30,000 or 40,000 people, in which it seemed impossible to get co-operation between the different elements of medicine in that community. We found that the doctors over there were divided by streets and alleys and blocks and buildings and religion and politics and in various other ways. We found, too, as a result, that out of the four men sent to the legislature, three were voting consistently against scientific medicine.

Probably the climax of that situation came when we were trying to pass, as we did pass, the Basic Science Bill, when one of the legislators arose during the discussion of the Bill and referred to the medical practitioners as "nothing but dirty cowards." It shows how far some of your politicians may go if you are not willing to use the power of organization in connection with health problems.

Well, these doctors got together and had a wonderful dinner meeting, and called each other Jim, John and George. They sent something like 2,500 postal cards to patients and said, "Here in this campaign is an issue of public health and this man is opposed to health. It is your duty as a good citizen to vote against him." They went

about the task of educating their patients as to the importance of beating this particular man because he was opposed to scientific medicine. They used their cars, used their telephones, talked to their patients, and they changed this man's usual heavy majority to a 1,500 defeat and drove him out of the politics of the state of Washington!

I want to tell you there is nothing in the world can stop or check organized medicine as it moves along the right track where the public interest is, and is willing to harmoniously press its tremendous power for the public good in connection with legislative standards or economic health policies.

Then they organized a great campaign of publicity in Washington. They reached the press through issuance of various health articles. They reached the radio stations and organized among other things a speakers' bureau which is now functioning and which includes 225 doctors, something like twenty-five dentists and members of the staffs of various colleges. There is a health army in that state of 250 representative men and women who go about the highways and byways, you might say, telling the story of scientific medicine to the people of Washington.

What has been the result of such an organized campaign in that particular state? In the first place, the Public Health League of Washington has never met but one defeat and that defeat it took to the people of the state of Washington for referendum. They threw it out by a majority of sixty thousand votes. That is one of the things that organization can accomplish!

Something like twenty proposals to cripple scientific medicine have been presented since the organization of this league, all of which have been defeated. They passed their Basic Science Bill, and I want to say we got our inspiration from the state of Minnesota so far as Basic Science was concerned. The bill presented to your legislature in 1924 was the plan we used in Washington state as a means of Basic Science legislation there. That bill, which is one of the most drastic of its kind in the United States, was passed through the legislature by a vote of approximately four to one and is operating successfully.

I compliment Minnesota on the fact that you have a Basic Science law. There may be some states that do not need it. I think Minnesota

does and I think probably seventy-five per cent of our states do require such a piece of legislation, which means the building of a wall around a state against quackery. Whenever you can keep your Basic law operative, keep your wall standing around the state against quackery, get proper, adequate, and useful enforcement machinery to keep cult-licentiates in the groove in which they are intended to work, many of the problems in medicine will be solved.

I want also to compliment the state of Minnesota on the apparent medical progress that has been made and the way you have gone about this serious task of organization; the way you are meeting your responsibilities as far as educational processes are concerned, and the way you are accommodating yourselves to the forces of public opinion here. Your dues, I understand, are set at \$15. I do not believe, and I speak with due respect, that those dues are too high. The whole tendency throughout the country now is to raise dues even beyond that figure.

In the state of Washington, the dues of the Public Health League are, plus the general dues of the State Association, about \$31. In the state of Oregon the dues are \$20; in the state of Idaho \$50, and \$60 if paid in installments.

Let's not decide that there is any necessity for reducing dues, because your organization does require a certain amount of money if you are to keep it from a simple postage stamp basis. It takes money to carry on the battle of an organization; it takes money to carry on these great processes of education and to reach the public, and to protect it against quack legislation and unsound practice. I hope there will be no disposition at any time on the part of this Association or any association in this country to reduce its dues.

I compliment this state Association on the contact it has with the Minnesota Public Health Association. You have a wonderful publication in the *Northwestern Health Journal*, which has some 40,000 subscribers. That represents a fine opportunity, it seems to me, of continually selling scientific medicine to the people of Minnesota. It is a wonderful magazine and has great opportunities, and in my judgment is one of the two outstanding health magazines in the United States. It is deserving of support and by your connection between the Minnesota Public Health Association and the Minnesota Medical Associa-

tion, you have a fine opportunity of co-operating with and meeting and accommodating yourself to the forces of public opinion in this state.

The program, I would say, in the state of Minnesota as in most of the States, must include a larger opportunity of organization, must include the utilization of added avenues of publicity, must include every effort on the platform and through the press and the radio to carry on the great work which you have already started in an effort to give proper education to the public on these questions of health.

Every day in this state 40,000 men and women pass through medical offices, seeking medical treatment it is true, but seeking and groping for leadership, wanting information about these issues, desirous of having that information that they may work with medicine in its great life-saving campaign.

I want to speak to you now in reference to the Gorgas Memorial Institute. It is a great national health organization, so constituted and planned, that it fits admirably in any policy of stressing scientific medicine through effective projects of health education. Through its contact with hundreds of daily newspapers, reaching every state in the nation, it speaks every week to some 20,000,000 people. Its radio releases add to this number. These health articles are written by ethical doctors, edited in the office, put in lay English, where necessary, and they are being well received everywhere they appear.

As an added means of health education, the Memorial has recently established a very unique system, called the "Caravan Plan," whereby it sends a group of interesting speakers to various communities to appear before luncheon clubs, schools and colleges, women's organizations and groups of this character. The training, education, ideals and scientific attainments of the medical profession are always emphasized and stress is given to the periodic health examination by the family doctor.

The most outstanding plank in the Gorgas platform is the periodic examination, and it proposes to conduct a comprehensive campaign, through the press, radio and on the platform, as well as through national poster service, to create added interest in this health plan.

In addition to our educational campaign, research work is made possible through the pas-

sage of a bill at the last Congress appropriating \$50,000 annually for the maintenance of a Gorgas Memorial Laboratory in Panama. This bill passed through both houses of Congress with unanimous votes, and then was promptly signed by President Calvin Coolidge. By special act of the appropriation committees, the initial appropriation was made available to the Memorial on July first of this year. It is expected that some 20 South and Central American countries will join in this activity, making an international project with the elimination of disease as the objective.

Certainly from the standpoint of a nationwide campaign of health education, with the romantic and utility story of scientific medicine in the foreground, does the Gorgas Memorial deserve the earnest support of the medical practitioners of this country. The laboratory in Panama, too, is one that should arouse the interest of all medical organizations.

It must not be forgotten, however, that this memorial is a tribute to Dr. William Crawford Gorgas. He took the scientific facts Dr. Walter Reed and his associates established, that yellow fever was transmitted by mosquitoes, and made Havana the cleanest spot under tropical skies.

Then he was sent to Panama, where his startling effort in the field of preventive medicine was the principal factor in the building of our great canal. Later he was given recognition by the medical profession of his country by being elected to the high office of president of the American Medical Association. After that, came the World War with its added laurels for Gorgas. As the head of the medical corps, and as such the trustee of the health of our millions of soldier boys, he achieved remarkable results in the morbidity rates for the war period; in fact, the soldier morbidity rates were lower than those of our civil population.

William Crawford Gorgas fought to the end. In seeking out other hidden nests of yellow fever beyond the seas he died on foreign soil. He died with a smile on his lips. His task had been well done. He was a great physician, a great member of the medical profession, and he was indeed a great American whose fame and deeds have circled the globe.

Is it not fitting that we should ask the earnest aid and interest of the medical profession in this tremendous project of health education, which serves as a mighty monument to one who served us and all mankind?

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#### EU-MED NOT ACCEPTABLE FOR N. N. R.

The Council on Pharmacy and Chemistry reports that Eu-Med is a preparation manufactured by Dr. Tell & Co., Berlin, Germany, and distributed in the United States by The Oralee Co., Cleveland, Ohio. The preparation is marketed in the form of tablets which are claimed to contain 0.05 Gm. of caffeine and 0.15 Gm. each of acetphenetidin, antipyrine and amidopyrine. The advertising advocates the promiscuous use of the tablets for a large number of conditions. This indiscriminate use is encouraged by such statements in the advertising as: ". . . Eu-Med is an absolutely harmless remedy which can be used without any fear by every physician and may be prescribed together with any other medicine." A circular intended for dentists

states: "This remedy has proven successful in all cases. Nervous pains, for instance, trigeminus neuralgia, headache of every description, toothache, woundache, after the end of a local anesthesia, are eliminated with 'Eu-Med'." In the advertising it is stated that the name Eu-Med is short and therefore easy to remember and that it means "good medicine." Each tablet has the name "Eu-Med" stamped on it. This, with its suggestive name, invites its promiscuous use by the public. The Council found Eu-Med unacceptable for New and Non-official Remedies because it is a complex, irrational mixture marketed with unwarranted therapeutic claims under a nondescriptive therapeutically suggestive name and in a way to invite its indiscriminate and ill advised use by the laity. (Jour. A. M. A., August 11, 1928, p. 397.)

# CASE REPORTS

## DUCO POISONING

### REPORT OF CASE

CLYDE A. UNDINE, M.D.  
*Minneapolis*

Duco is the trade name for a type of varnish of a resistant nature. Its introduction during the last two years has revolutionized the varnish and paint industry. It consists of nitrated cellulose in solution. I have read that there are no reports of a possible health hazard, and this is the reason for reporting this case.

Owing to its recent introduction and the lack of information in medical literature and elsewhere, a letter was addressed to Dr. A. K. Smith, medical director of the Dupont de Nemours & Co. He replied:

"Duco consists largely of the acetates of amyl, butyl, and ethyl, with the diluents denatured alcohol, toluene, butyl alcohol, amyl alcohol. As regards the health features, Duco is not so different from pyroxylin lacquers that have been in use for years. Many million gallons of such lacquers have been used without any deleterious effects. The use of benzine and allyl alcohol has purposely been avoided on account of the dangerous effect on the human economy. The only instruction necessary in the application of Duco or any similar lacquer is that the operation be carried on in a well ventilated place."

A young man thirty years of age who worked in an automobile refinishing place of business where much Duco was used, became very ill and began to expectorate bloody, frothy sputum. He became very nauseated, very weak, ran a temperature of from 100 to 102. He was placed in the hospital; ice packs were used over his chest; he still continued to have bloody sputum in large amounts for a number of days. His temperature remained the same for practically two and a half weeks; after that his fever went down gradually until it became normal within a period of several weeks. After the first two weeks' rest his cough ceased and he did not raise any more bloody sputum. The sputum at first was of large amount and looked like that of an advanced case of pulmonary tuberculosis. While in the hospital he gained in weight, and was able to leave in good shape at the end of five weeks. Numerous x-rays were taken while in the hospital and since dismissal, over two years ago, no signs of tuberculosis have been found.

This man had worked in the auto refinishing department for two years and said that he had noticed that the gas, as he called it "that banana odor," was getting the best of him. Upon investigation of the place where he was working, I found that the place was very poorly ventilated, had no roof ventilators, and only one window at one end of the building. On reporting this case to the Industrial Commission, the company who em-

ployed this man immediately put in ceiling ventilators and ventilators at both ends and also on the sides of the building, so that plenty of ventilation was effected. I advised the man not to go back to this kind of work. The patient is now well.

## GALL-STONE ILEUS

### REPORT OF UNUSUAL CASE

O. A. OLSON, M.D.  
*Minneapolis*

This patient over eighty years of age had been admitted to the Minneapolis General Hospital on February 7, 1926, suffering with an acute bronchitis. She had never had an operation. Upon recovery from bronchitis she was transferred to the home for the chronics.

She got along very well until July 22, 1926, when she began to vomit. This continued with increasing severity until July 26, 1926, when emesis became fecal in character and projectile. Diagnosis of intestinal obstruction was made, and she was transferred to the General Hospital.

She was admitted to my service on February 26, 1927. Her abdomen was enormously distended, she was dehydrated, vomited fecal matter, and complained of severe abdominal pain. On account of her age, physical condition, and the late stage of the disease she was an extremely poor surgical risk but as an operation was her only hope of recovery we felt that she was entitled to it, and she was operated upon at once.

Through a right rectus incision the abdomen was explored. The obstruction was found in the ileum about two feet from the ileocecal valve. Four large masses, each about 3 cm. in diameter, were found impacted within the ileum. They were cube shaped masses located about 2 inches apart and were first thought to be fecoliths. They were removed through an incision in the ileum and the abdomen was closed in the usual manner.

The patient died the following day and at autopsy an old cholecysto-duodenal fistula was found, connecting the gallbladder with the duodenum. The masses removed at the operation were sent to pathologist for examination and were found to be gallstones. The patient also had a large number of small stones within the gallbladder.

### • CONCLUSION

This case is reported because of the unusual type of obstruction which is explained by the cholecysto-duodenal fistula. This fistula apparently occurred years before. The gall stones within the ileum must have sloughed through the gallbladder into the duodenum, causing the fistula. Presumably these stones were within the bowels for years and finally produced obstruction.

## President's Letter

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THE Millbank Foundation has spent \$500,000 in the last five years carrying on a health demonstration in Cattaraugus County, New York. The Cattaraugus County Medical Society is sending all over the country pamphlets giving their opinion of the work. They conclude that, "The demonstration has demonstrated that whenever lay bodies attempt to interfere and guide health work the result is inefficiency and chaos."

When the demonstration was started it was proposed to build a county health unit after the plan so successfully operated by Dr. S. M. Welch in Alabama, with one exception, and that was the substitution of lay control. "In Alabama the State Medical Association is the State Board of Health. The County Boards of Health are composed of five doctors elected by the County Medical Societies," and by this plan, according to Dr. Welch, "friction is avoided and the work is not misdirected by well-intentioned but untrained people."

"The county health unit in the Millbank demonstration was composed of four laymen and one physician selected by the demonstrators. This has led to total lack of consideration for the feelings or opinions of the practising physicians and constant irritation has finally led to open opposition." In the opinion of the doctors the total result of the work has been the cataloging of the anatomical defects of the population without any intelligent understanding of community health problems. The director of the demonstration, however, is going ahead to spend another \$500,000 in the next five years, with no attempt to modify the plan.

There is a lot to be learned from this controversy. The message to the profession of the country from the Cattaraugus County Medical Society is better organization of the practising physicians, and properly trained medical supervision of public health activities.

*C. B. Wright*

# EDITORIAL

## MINNESOTA MEDICINE

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## Tularemia

With the coming of fall and the hunting season for wild rabbits, tularemia will again appear and become a public menace, not only because of its mortality but because its victims are so long incapacitated. This is the first truly American disease. The discovery of the causative agent, the source of infection, and modes of transmission as well as its symptomatology and pathology are all the result of investigation of American workers and it occurs only in America except for the possibility of a few cases in Japan. The organism was first discovered by McCoy and Chapin<sup>1</sup> in 1911 in the ground squirrels of Tulare

County in California and was therefore named *Bacteria tularensis*. In 1919, Francis<sup>2</sup> found that the same organism was the cause of "deer fly fever" in man, so he gave the disease the name of tularemia and in 1928 he was awarded the gold medal of the American Medical Association for outstanding original work. Since 1919 tularemia has been more and more generally recognized until 614 cases have now been reported in forty-two states and the District of Columbia. However, in all probability, these cases represent a very small part of the actual incidence of the disease. During the past year, Simpson<sup>3</sup> of Dayton, Ohio, after recognizing a fatal case on his autopsy table, found forty-eight other cases in four months and of these twenty-four occurred in the month of November, 1927. Then by means of agglutination tests he located twenty-five more cases occurring from 1908 to 1927, making at total of seventy-four cases, more than have been reported from any one other state. From this, one is forced to believe that increased interest would bring to light many more overlooked cases.

Tularemia is infectious but not contagious and may be spread by bites of blood-sucking insects such as the tick. These insects are rare east of the Rocky Mountains and in this state it is probably always caused by handling wild rabbits, 1 per cent of which are usually affected and many more during epidemics. The disease has four different clinical manifestations, ulcero-glandular, oculo-glandular, glandular and the so-called "typhoid" type, all with an incubation period of two to five days. The ulcero-glandular type is, by far, the most common. The onset is sudden, with an ulcer at the point of inoculation, usually an abrasion of the skin, with enlarged, tender, painful regional lymph nodes and a high fever of the irregular or septic type. Prostration is marked and the high fever, which lasts about a month, is followed by a slow convalescence of one to two months and the usual health is not regained for about a year. Excision of the ulcer

<sup>2</sup>Francis: Deer fly fever. Pub. Health Rep., 34 U. S. P. H. S. 2061, 1919.

<sup>3</sup>Simpson: Tularemia in Dayton, Ohio. Ann. Int. Med. 1:1007, 1928.

<sup>1</sup>McCoy and Chapin: A plague-like disease of rodents. Pub. Health Rep., 43 U. S. P. H. S. 53, 1911.

does not hasten healing; the lymph nodes may not suppurate at any stage of the disease or they may remain hard and tender for months. The oculo-glandular type is rare but is similar to the ulcero-glandular except for the fact that the initial lesion is a severe conjunctivitis. The glandular type shows no initial lesion and experimentation has shown that the organism can pass through the unbroken skin and cause the disease. The typhoid type is accompanied by fever only and is the form most frequently seen in laboratory workers among whom there have been more victims than in any other one disease. All of the different types are easily and accurately diagnosed by the agglutinins in the patient's serum. Agglutination usually appears some time in the second week, increases in titer sharply in the third week, reaches its maximum in the seventh week, and then gradually decreases until the end of the year, when it averages 1:36, where it remains for at least twenty years, presumably for life.

The mortality, while not alarmingly high, cannot be ignored. Of the total cases reported, there were twenty-three deaths, a mortality of 3.7 per cent. Simpson reported seven deaths, making a mortality of 9.4 per cent. In Minnesota prior to September 1, 1928, there have been reported twelve cases of tularemia with two deaths, bringing our mortality to 16.6 per cent. It seems reasonable to believe that many unrecognized or fulminating cases die without being reported, so that the mortality may be really much greater than has, as yet, been determined.

The disease may be first suspected by a careful history disclosing contact with a rabbit and a definite diagnosis can be made by sending a specimen of the serum to the State Board of Health Laboratories on the University Campus, where it will be examined without any charge. Since the treatment is entirely symptomatic, the only hope of combating the disease lies in prophylaxis. The disease could be entirely stamped out by changing the game laws and allowing wild rabbits to be killed off (tame rabbits do not have the disease), or by forcing every person handling rabbits for any purpose, whatsoever, to wear rubber gloves, and it could be prevented to a certain degree by holding all killed wild rabbits in cold storage for a month before placing them on the market and by cooking all rabbit meat thoroughly to the bone. But most of

all, sufficient publicity concerning the disease must be given to the public to convince it of the severity, as well as the need of prevention, of tularemia. And such publicity must come, of course, from the medical profession and the Public Health Service of this country.

MARGARET WARWICK, M.D.

### The Need of Regional Medical Conferences

The recent annual meeting of the Northern Minnesota Medical Association\* brought out a registration of one hundred and twenty-one doctors. Many came with their families. Local arrangements were of the highest order and the preparations well nigh ideal. Dr. Patterson and his staff at the State Hospital provided an afternoon of unusual scientific interest. The idea of bringing such a large group of practitioners directly into one of our largest State institutions for the mentally diseased, for the purpose of showing them how such patients are handled, was as enlightening as it was novel. The variety of cases and the striking examples of many clinical entities shown brought home to many doctors an understanding of a diseased state in which they will certainly have a greater interest on account of this experience. More such contact with other correctional, curative and custodial institutions should be made. Our profession would thus come to lose a certain sense of aloofness; an abandoning of the assumption that certain medical problems are disposed of by covering them up in conventional institutions; correcting the idea that doctors outside and in institutions have very little in common. It was shown that the problems that these men are dealing with are in truth only the flagrant outcroppings of physical or unsocial inadequacy which renders their patients quite unfit for self-support or orderly community life. Let us hope for more such intramural institutional clinics—not to mention more such splendid banquets as Dr. Patterson served to us.

As usual the echo or suggestion passed around that we have too many medical societies and meetings. No one seemed to intimate that we have too many golf courses. Certainly no better means has ever been devised for trying out various famous links than the autumnal visitant commonly known as *hay-fever*. In any case for those who cannot qualify for sojournment away

\*Meeting held Aug. 20-21, 1928, at Fergus Falls, Minn.

from home under the urge of a dripping nose or glaring eyes, there remains an equally effective agency—the compulsory attendance at medical meetings?

The meeting brought together a great many general practitioners from northern and northwestern Minnesota; men who might not ordinarily go to larger meetings such as that of our State Association. The balanced program gave to them a scope of papers covering much more than their local societies could well arrange for in a series of years. It is stated that medical science has made greater advances in its general application in the last thirty years than in all previous time. How is the average man going to keep up with this progress without attending many conferences and clinics whenever possible?

St. Luke's Hospital at Fergus Falls (recently opened), the regional medical society and the various committees arranging for this meeting deserve the highest commendation.

E. L. T.

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### **Ancker Hospital for All**

The recent action of the Ramsey County Board of Control increasing the personnel of the social service department of the Ancker hospital in order to more effectively exclude patients able to pay for medical care was the subject of editorial comment in the Pioneer Press under the title "Ancker Hospital for All." The article advocates a "pay according to ability" plan and states that "not for a moment should Ancker hospital be closed directly or indirectly to any resident of Ramsey county."

Ever since the institution of the hospital the vast majority of its patients have been treated free. The number of pay patients (those who pay both hospital and attending physician) has been restricted to a minimum because of lack of hospital facilities. A policy of admitting patients able to pay something for hospital accommodations but not the staff physician has been opposed by the local profession inasmuch as services of the hospital staff are rendered gratis and such a policy simply increases the charity services of the profession. At the Minneapolis General hospital such a policy has been in vogue in spite of opposition on the part of Minneapolis physicians,

with the result that almost no one is refused the free services of the medical staff.

The problem of the high cost of medical care is a serious one. The wealthy and very poor have no cause for complaint, but to the majority of the population, who belong to neither of these classes and who form the bulk of the clientele of private practitioners, the high cost is a burden. Hospital maintenance has come to be such an expensive proposition that most private institutions depend on private subscription in one form or another. Few patients in private institutions pay the full cost of their hospital care. Whether the difference in cost is made up by private donations or taxes is of little moment as far as the individual patient is concerned. The need for the strictest economy on the part of hospital management is only too evident.

We presume that a proposal that patients able to pay something be admitted to the Ancker hospital and pay the attending physician and not the hospital would meet with opposition. This would seem much more reasonable, however, than that such patients should pay the hospital and not the physician. It would be fairer that the whole community should bear the burden through taxation rather than the doctors alone.

Any plan which would increase the already large percentages of the population receiving free service from the profession would be an imposition on a profession which has always been willing to give its service gratis to the needy.

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### **CONVALESCENT SERUM IN EPIDEMIC POLIOMYELITIS**

The main indication for treatment in this disease is the prevention of paralysis, which is due to the action of the poliomyelitic virus on the nerve cells that preside over movement and nutrition of voluntary muscles. Fortunately there is a period in the evolution of the attack of poliomyelitis during which it may be possible to neutralize the virus before it can develop its maximum destructive effects on the motor nerve cells. There seems to be no question that poliomyelitis can be recognized in this stage. The results obtained from intraspinal and intravenous injections of convalescent serum are encouraging. Theoretical considerations and the results of careful observation appear to justify fully the further trial of convalescent serum in preparalytic poliomyelitis. (Jour. A. M. A., August 11, 1928, p. 398.)

## A PAGE FORUM OF THE ❧ COMMITTEE ON PUBLIC HEALTH EDUCATION ❧

### The Public Relations of the County Medical Society

[The Committee suggests that you read Mr. Jones' article on page 697.]

The following paragraphs are excerpts from a speech given by Dr. Arthur W. Rogers, Oconomowoc, before the Secretaries Conference in Milwaukee, January, 1928.

"We realize that we are inclined to keep within our shell. It is only necessary to know the origin and the history of the medical profession to appreciate the reason for this, that we have always been ultraconservative. But, as I look upon it, the trouble is this: While commercial and industrial organizations and many individuals are readjusting themselves and their manner of doing business to the times, we have up to date failed to do that. We are trying to conduct the practice of medicine just the same as we did when the country had about 50,000,000 instead of 125,000,000 people. That day is past.

"The foremost function of the medical society is, of course, scientific, but when it comes to organization, there must be a well organized society, and in these times there must always be a business end to it. We have to meet changing conditions. It is just as important that we have business organizations—commercial organizations—as it is to have scientific organizations. It has been charged, at times, that the medical profession was inclined to say "hands off" to any study of its economic and social activities. We are, and must remain, partners in efforts of progress and must be willing to so organize our work that it will continue to be the greatest example of public service that the community can see.

#### SERVICE CLUBS

"A very valuable approach to the public is through the Service Clubs. There are, of course, many of these; we know especially well the Rotary, Kiwanis, Lions, Business Men's Clubs, Parent Teachers Associations, and the Associations of Commerce. These organizations want talks on periodic medical examinations; they want talks on similar lines of medical interest. Why cannot the County Medical Society through the Local Publicity Committee, delegate or designate some member to appear before these different clubs occasionally or at specific intervals, and give an up to date address on a subject which would be of interest to the public?

#### THE COUNTY NURSE

"The county nurse is rarely seen at the meetings of the County Medical Society. She is cursed many times at these meetings, however. Does this seem fair? There is no question but that the county nurse is often ill-advised in her activities. There is no question, on the other hand, but that the county nurse is a very valuable adjunct to the medical profession. The question is raised: Why should not the county nurse appear at the meetings of the County Medical Society, occasionally, or a committee be appointed to assist her in solving the health problems. She certainly is an individual to confer with. She is the one who, in her wanderings, can teach the public many things that we want taught, and yet we are not in a position to reach the public in that way. The county nurse can teach the people the necessity of prophylaxis against diphtheria and scarlet fever, and can direct a great many patients along these lines that need care and attention.

#### LAY SPEAKERS

"The wisdom of having lay speakers on our programs occasionally has been advocated. One of the societies of New York has even taken laymen as members of their organization. The advisability of this is questionable. But by bringing in speakers to talk to us on subjects other than medical ones, inviting laymen to our meetings and even going to the extent of throwing one or two meetings a year open to the public at large, is simply another way of reaching the public."

## REPORTS AND ANNOUNCEMENTS OF SOCIETIES

### SOUTHERN MINNESOTA MEDICAL ASSOCIATION

The Southern Minnesota Medical Association will meet in Rochester, Minnesota, October 2 and 3, 1928. In addition to the following program there will be opportunities for attending surgical, medical, and other clinics. Provisions are being made for the entertainment of visiting ladies. All members of the Association are urged to be present at the first Rochester meeting of the society since 1922. Programs and reservation cards have been mailed to all persons interested, and reservations can be made by communicating with Dr. M. C. Piper, Mayo Clinic, Rochester, Minnesota.

#### TENTATIVE PROGRAM

##### SOUTHERN MINNESOTA MEDICAL ASSOCIATION

October 2, 1928.

Registration, Lobby of Kahler Hotel.

Colonial Hospital Operating Room.

Urological Clinic.....Drs. Hager and Bumpus  
General Medical Clinic.....

Dr. D. M. Berkman and Associates

Gynecological Clinic.....Drs. Stacy and Masson

Fracture Clinic.....Drs. Henderson, Jones and Associates

University Club Rooms

Clinic on Diseases of the Blood.....

Drs. Giffin, Connor and Heck

Management of Cardiac Decompensation Association  
with Hyperthyroidism (Clinical Demonstration).....

Dr. Barnes

The Management of Peptic Ulcer (Clinical Demonstration).....Drs. Eusterman and Balfour

The Palliative Treatment of Inoperable Malignancy.....

Dr. W. J. Mayo

Luncheon. Kahler Hotel. Guests of the Clinic.

Analysis of a Case of Possible Cerebral Lesion.....

Dr. H. Kooiker, Albert Lea, Minnesota

Gunshot Wounds of the Chest with Residual Foreign  
Bodies.....Dr. R. St. J. Perry, St. Paul, Minnesota

The Reportable Contagious Diseases.....

Dr. A. J. Chesley, Minneapolis, Minnesota

Clinical Experiences with Eclampsia.....

Dr. J. Mills, Winnebago, Minnesota

Clinical Aspects of Cystitis.....

Dr. A. E. Sohmer, Mankato, Minnesota

Cystoscopic Examination of the Prostate.....

Dr. F. E. B. Foley, St. Paul, Minnesota

Case Reports on Psychoses.....

Dr. W. A. Jones, Minneapolis, Minnesota

Veronal and Paraldehyde Addiction and Poisoning.....

Dr. G. N. Ruhberg, St. Paul, Minnesota

The Treatment of Acute Epidemic Encephalitis.....

Dr. F. W. Heagey, Omaha, Nebraska

Leprosy.....Major Lovewell, U. S. A.

7 P. M. Banquet. Rochester Country Club

October 3, 1928.

Nurses Lecture Rooms, St. Mary's Hospital

Pediatric Clinic.....Dr. Helmholtz and Associates

Benign and Malignant Hypertension (Clinical Demonstration).....Drs. Keith and Wagener  
Problems in the Treatment of Chronic Arthritis,  
(Clinical Demonstration) Drs. Hensch and Rentschler  
The Management of Obstructive Lesions of the Colon  
(Clinical Demonstration) .....

Drs. Borgen, Sistrunk and Rankin.

Amphitheater, St. Mary's Hospital

Obstructive Jaundice (Clinical Demonstration).....

Drs. McVicar, Weir and Walters

Thoracic Surgery. Lantern Demonstration.....

Dr. S. W. Harrington

Neurosurgical Clinic.....Drs. Adson and Craig

Surgical Diagnostic Clinic.....Dr. E. S. Judd

12:30 P. M. Luncheon and Business Meeting,

Kahler Hotel

Diathermy and Radiotherapy in General Practice.....

Dr. B. H. Haynes, St. James, Minnesota

The Injection Treatment of Varicose Veins.....

Dr. A. E. Bratrud, Minneapolis, Minnesota

Foreign Bodies in and Near Joints.....

Dr. E. S. Geist, Minneapolis, Minnesota

Chronic Pulmonary Infection in Childhood.....

Dr. E. E. Platou and Dr. C. Stewart, Minneapolis,  
Minnesota

The Periodic Examination of the Acuity of Hearing in  
School Children as a Means of Preventing Deafness.

Dr. H. Newhart, Minneapolis, Minnesota

Unusual Types of Lymphocytic Reaction with a Dis-  
cussion of Agranulocytosis.....

Dr. E. Herrmann, St. Paul, Minnesota

Chronic Anemia and the Use of Fetal Liver Extract  
in Its Treatment.....

Dr. C. B. Wright and Dr. C. H. Watkins, Minne-  
apolis, Minnesota

Observation on the Contours of Normal and Diseased  
Chests.....Dr. S. A. Weisman, Minneapolis, Minnesota  
Jejunectomy with Enterorrhaphy; Multiple Perforations  
of the Intestine from Gunshot Wound. Case Report  
and Presentation of Specimen.....

Dr. C. J. Holman, Mankato, Minnesota

Motion Pictures. The Diagnosis and Treatment of In-  
fections of the Hand.

8:15 P. M. Regular Weekly Staff Meeting of the  
Mayo Clinic, Clinic Lobby

Clinical Studies on Nephritis of Pregnancy.....

Dr. R. G. Mussey

The Significance of Unilateral Exophthalmus.....

Dr. W. L. Benedict

Recent Advances in the Physiology of the Gall-bladder  
and Liver.....Dr. F. C. Mann

Exstrophy of the Bladder.....Dr. C. H. Mayo

#### WOMAN'S AUXILIARY TO THE A. M. A.

The sixth annual session of the Woman's Auxiliary to the American Medical Association was held in Minneapolis, Minnesota, June 11-15, 1928. Over 1,200 women registered and they were delightfully entertained and cared for by the local Auxiliaries.

The business meetings were largely attended, 400

women being present at the all day session of June 14. Much interest was given to the reading of the papers and State reports. There are now well organized and efficient units in 30 States.

The abstracted proceedings will be printed at an early date and a copy sent to the entire membership.

The following officers were elected:

President: Mrs. Allen H. Bunce, 360 Ponce De Leon Ave. N.E., Atlanta, Georgia.

President-elect: Mrs. Geo. H. Hoxie, 3719 Pennsylvania Avenue Kansas City, Missouri.

First Vice President: Mrs. Evarts V. DePew, 115 East Agarita Ave., San Antonio, Texas.

Second Vice President: Mrs. David W. Parker, 52 Clark St., Manchester, New Hampshire.

Third Vice President: Mrs. Horace Newhart, 212 West 22nd St., Minneapolis, Minnesota.

Fourth Vice President: Mrs. Frank W. Cregor, 1621 North Meridian St., Indianapolis, Indiana.

Treasurer: Mrs. Orvin Abell, 1433 South Third St., Louisville, Kentucky.

Secretary: Mrs. M. T. Edgerton, 788 Penn Avenue, Atlanta, Georgia.

Parliamentarian: Mrs. F. L. Adair, 2500 Blaisdell Avenue, Minneapolis, Minnesota.

Directors for two years: Mrs. John O. McReynolds, Dallas, Texas; Mrs. Wayne W. Babcock, Philadelphia, Pennsylvania; Mrs. A. Haines Lippincott, Camden, New Jersey.

Directors for one year: Mrs. F. P. Gengenmach, Denver, Colorado; Mrs. William E. Parke, Philadelphia, Pennsylvania; Mrs. J. T. Christison, Saint Paul, Minnesota.

#### CHAIRMAN OF COMMITTEES

Organization: Mrs. A. T. McCormack, Louisville, Kentucky.

Health Education: Mrs. Geo. H. Hoxie, Kansas City, Missouri.

Hygeia: Mrs. A. B. McGlothlan, Saint Joseph, Missouri.

Publicity: Mrs. T. C. Terrell, Fort Worth, Texas.

Program: Mrs. Southgate Leigh, Norfolk, Virginia.

Finance: Mrs. G. Henry Mundt, Chicago, Illinois.

Entertainment: Mrs. William Keydendall, Eugene, Oregon.

Public Relations: Mrs. E. H. Cary, Dallas, Texas.

Revision of By-laws: Mrs. Morris Fishbein, Chicago, Illinois.

#### SPECIAL APPOINTMENTS

Auditor: Mrs. C. W. Roberts, Atlanta, Georgia.

Historian: Mrs. E. V. DePew, San Antonio, Texas.

Committee on Health Films: Chairman, Mrs. John O. McReynolds, Dallas, Texas.

Committee on Resolutions: Chairman, Mrs. J. N. Hunsberger, Norristown, Pennsylvania.

Committee on Credentials and Registrations: Chairman, Mrs. James N. Brawner, Atlanta, Georgia.

Special Advisory Committee: Mrs. S. C. Red, Houston Texas, and Mrs. Seale Harris, Birmingham, Alabama.

#### JOINT MEDICAL SOCIETY MEETING

Members of the Rice, Goodhue and Dakota County Medical Societies were the guests of Dr. W. D. Beadie, superintendent of the Mineral Springs sanitarium at Cannon Falls, Minnesota, in September. Dr. P. A. Smith of Faribault, president of the Rice County Medical Society, presided at the meeting, which followed a dinner given at the sanitarium.

Dr. Porter P. Vinson of the Mayo Clinic, Rochester, read an interesting report on the subject, "Bronchoscopy in the Diagnosis of Tuberculosis." "The Use of Iodized Oil in Tuberculosis Patients" was the subject of the paper read by Dr. Everett K. Geer, St. Paul. Dr. F. O. Jennings of the Glen Lake Sanitarium, Minneapolis, contributed a paper entitled, "Can the Treatment of Tuberculosis Be Made More Interesting to the General Practitioner?"

Following the talks, several x-ray plates illustrating extraordinary cases of tuberculosis were exhibited by Dr. F. O. Steffens, Red Wing.

The guests inspected the sanitarium, which is sponsored by the three counties, and found that at the present time there are 42 patients in the building originally equipped to house but 25. The institution also has a large waiting list. It was decided to push the project of a new building as soon as possible.

#### OF GENERAL INTEREST

Dr. H. A. Somerfield of Minneapolis has moved to Hallock, Minnesota.

Dr. H. E. Bolstad, formerly of Saint Paul, is practicing in Berkeley, California.

Dr. E. E. Shrader has moved from Watertown, Minnesota, to Huntington Park, California.

Dr. A. R. Hall, Saint Paul, was married September 1, to Maude Perry Bowron of Chicago.

Dr. G. A. Paulson is practicing in Sioux City, Iowa. Dr. Paulson formerly lived in Duluth, Minnesota.

Miss Patricia Grant and Dr. Gordon Kamman, both of Saint Paul, were united in marriage September 8.

Dr. R. E. Anderson has disposed of his practice at Atwater, Minnesota, and is now located at Willmar.

Dr. R. H. Wilson has disposed of his practice at Harmony, Minnesota, and is now practicing in Saint Paul.

Dr. Clarence Jacobson has moved from Kimball, Minnesota, to Hibbing, where he is associated in practice with Dr. B. S. Adams.

Dr. Harold H. Vandersluis is now practicing in Park Ridge, New Jersey. Dr. Vandersluis formerly lived in Fergus Falls, Minnesota.

Dr. Paul H. Rowe, formerly of Minneapolis, is now associated with the Northwest Clinic, Minot, North Dakota, in the section on internal medicine.

Dr. Emil S. Geist of Minneapolis has returned to active practice in association with Dr. Myron O. Henry in the Yeates Building, following an absence due to illness, from which he has completely recovered.

Dr. D. E. McBroom, formerly senior physician at the

School for Feeble Minded at Faribault, took over his new responsibilities as superintendent of the Colony for Epileptics at Cambridge, Minnesota, September 1.

Dr. Ruth Boynton, who has been engaged in student health service work in Chicago for the past year, has returned to Minneapolis and has resumed her work in the Department of Student Health Service at the University of Minnesota.

At the annual meeting of the Minnesota Academy of Medicine, September 12, Dr. C. Naumann McCloud of Saint Paul was elected president, Dr. Gustav Schwyzer of Minneapolis, vice-president, and Dr. C. B. Drake of Saint Paul, secretary-treasurer.

Dr. E. L. Meyer of Minneapolis left September 19 for Philadelphia, where he will take a course of work in internal medicine at the University of Pennsylvania Graduate School of Medicine. Dr. Meyer expects to return to Minneapolis sometime next June.

Dr. Margaret Warwick, who has been associated with the Miller Clinic of Saint Paul since its formation and who has been the pathologist at the Miller Hospital since the hospital was opened, will leave November 1, 1928, to be pathologist at the Millard Fillmore hospital in Buffalo, New York.

Some twenty-six members of the Ramsey County Medical Society defeated a similar number of Hennepin County members at the Midland Hills course Friday, September 7, by the score of 37 to 9. Drs. J. M. Culligan, D. D. Turnacliiff, C. G. Perry and S. R. Maxeiner all tied for low gross score.

The new clinic building of the Mayo Clinic, at Rochester was dedicated with appropriate ceremonies on September 18. The building is said to be the largest medical clinic building in the world. Morning and evening recitals were played on the new carillon, located in the new building and dedicated to former service men.

## NEW AND NON-OFFICIAL REMEDIES

The following articles have been accepted by the Council on Pharmacy and Chemistry:

ABBOTT LABORATORIES

Potassium Bismuth Tartrate with Butyn-D. R. L., 20 c.c.

PARKE, DAVIS & CO.

Scarlet Fever Streptococcus Toxin for Skin Test-P. D. & Co.

E. R. SQUIBB & SONS

Ephedrine Hydrochloride-Squibb

SWAN-MYERS CO.

Syrup Ephedrine Hydrochloride-Swan-Myers

### TRUTH ABOUT MEDICINES

*Petrolagar (Unsweetened).*—Liquid petrolatum 65 c.c. emulsified with agar in a menstruum containing sodium benzoate 0.1 Gm., and water to make 100 c.c. Deshell Laboratories, Inc., Chicago.

*Mead's Standardized Cod Liver Oil, Flavored.*—Mead's standardized cod liver oil (New and Non-

official Remedies, 1928, p. 253) containing 0.12 per cent of a mixture of vanillin and oil of lavender as flavoring. Mead Johnson & Co., Evansville, Ind.

*Cellu Soy Bean Flour.*—A partially defatted flour prepared from the soy bean, having approximately the following composition: protein, 45.5; carbohydrate, 25.5, of which less than one half readily yields sugar; fat, 8.5; ash, 6.0; fiber, 4.7; and water, 9.5. Cellu soy bean flour may be used for preparing bread and muffins in cases in which a diet relatively free from carbohydrate is desired, as in diabetes and amylaceous dyspepsia. The Chicago Dietetic Supply House, Chicago.

*Cellu Soy Crisp.*—A prepared "breakfast food" made from cooked soy beans without removal of fat and having approximately the following composition: protein, 45.6; carbohydrate, 16.1, of which less than one-half readily yields sugar; fat, 20.8; ash 6.7; fiber, 6.8; and water 4.0. It may be used in cases in which a diet relatively free from carbohydrate is desired, as in diabetes and amylaceous dyspepsia. The Chicago Dietetic Supply House, Chicago.

*Mead's Powdered Boilable Lactic Acid Milk.*—A modified milk product prepared by adding lactic acid U. S. P. to whole milk, drying and powdering. Each 100 Gm. contains approximately protein, 26 Gm.; lactose, 36.3 Gm.; butter-fat, 27.2 Gm.; free lactic acid, 3 Gm.; ash, 6 Gm., and moisture, 1.5 Gm. Mead's powdered boilable lactic acid milk is proposed for overcoming the so-called buffer action of cow's milk in the infant's stomach. Mead Johnson & Co., Evansville, Ind.

*Diphtheria Toxoid—Diphtheria Anatoxin.*—The toxin of diphtheria modified by the method of Ramon. The work of G. Ramon of the Institut Pasteur has shown that the toxin of diphtheria may be modified by treatment with formaldehyde to reduce its toxicity and yet preserve its antigenic properties. Diphtheria toxoid is used for active immunization against diphtheria. It is administered subcutaneously.

*Diphtheria Toxoid-Mulford — Anatoxine-Ramon.*—Prepared from broth cultures of diphtheria toxin having an L + dose of 0.25 c.c. or less, diluted with physiologic solution of sodium chloride and free of serum proteins. It is marketed in packages of one immunizing treatment and in packages of ten immunizing treatments. H. K. Mulford Co., Philadelphia. (Jour. A. M. A., August 4, 1928, p. 321.)

*Protein Extracts Diagnostic-P. D. & Co.*—In addition to the products listed in New and Non-official Remedies, 1928, p. 42, the following have been accepted: Cotton Protein Extract Diagnostic-P. D. & Co.; Cotton Seed (Cake) Protein Extract Diagnostic-P. D. & Co.; Goat Hair Protein Extract Diagnostic-P. D. & Co.; Human Hair Protein Extract Diagnostic-P. D. & Co.; Kapok Protein Extract Diagnostic-P. D. & Co.; Peptone Protein Extract Diagnostic-P. D. & Co.; Poplar-Pollen Protein Extract Diagnostic-P. D. & Co.; Sunflower Pollen Protein Extract Diagnostic-P. D. & Co.; Sweet Vernal Grass Pollen Protein Extract Diagnostic-P. D. & Co. Parke, Davis & Co., Detroit. (Jour. A. M. A., August 11, 1928, p. 397.)

## PROCEEDINGS OF THE MINNESOTA ACADEMY OF MEDICINE

Meeting of May 9, 1928

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Wednesday evening, May 9, 1928. Dinner was served at 7 p. m. and the meeting was called to order at 8 p. m. by the President, Dr. John E. Hynes. There were 30 members and three visitors present.

Minutes of the April meeting were read and approved.

Dr. Colvin (St. Paul) read the following memorial on the life of Dr. J. G. Cross, and a motion was carried that this be spread upon the minutes of the Academy.

Dr. JOHN GROSVENOR CROSS was born in Rochester, Minnesota, 57 years ago, and died March 3, 1928.

He was graduated from the University of Minnesota in 1892, and from the Northwestern Medical School in 1895. After the usual year of hospital internship in Chicago, he settled in Rochester, Minnesota, being associated in practice with his father. He remained in Rochester about seven years.

His desire for the knowledge, which later in life made him valuable to his patients, took him to Europe in 1902, where he spent two years of clinical observation and study. His wife, who had been his constant companion during his college life, accompanied him with their three small children. His determination to spend these years in study added another student of medicine to the large number of earnest young men from America, who were eager to add to their knowledge by contact with the teachers of renown and experience in another country.

On his return he settled in Minneapolis, where the remainder of his life was spent. Here he soon obtained a large following of devoted friends and patients. During the twenty-four years of practice in Minneapolis, although ranking as an internist, his interest in sick people took him much beyond the limits of office and hospital practice. He was a real physician at heart and felt a kindly personal interest in his patients, which endeared him to so many of them. Nothing was allowed to interfere with his sense of duty in his life's work. It was his constant effort to practice medicine on a very high plane of scientific endeavor both in his clinical approach and in laboratory methods, and he most happily combined in proper proportion these two great interrelated features of medicine. Combining thus internal medicine, so-called, with a larger knowledge and experience of many other aspects of practice, he exemplified a medical character which, in the present transition of our professional life, fills now, and perhaps always will, a great part in the contact between suffering human beings and the medical profession.

He was not much given to writing papers on medical subjects, but, when he did write, his papers bore the impress of an earnest studious nature.

He was meticulous in the ethics of medicine and be-

lieved that they played a very important part in the life of a practitioner of medicine. Certainly it was pleasant to meet him on this plane.

Endowed with a natural dignity, there was combined a sense of humor and wit. He was unsurpassed as a teller of stories, and had a famous repertoire. These attractive characteristics, combined with a most honorable high-minded manner of thinking and living, made him an inspiration to all who came in contact with him. His kindly, generous attitude to younger men was a further evidence of his fine nature.

John Grosvenor Cross will be remembered long by those who knew him best.

Dr. A. T. Mann, Chairman,  
Dr. Geo. Douglas Head,  
Dr. A. R. Colvin.

Dr. HILDING BERGLUND (Minneapolis) reported a case of pneumonia with a peculiar lung condition following the pneumonia.

### DISCUSSION

Dr. A. SCHWYZER: I wonder if this could not be an infarct. That would explain the fluid in the chest and the bloody expectoration. It depends on the degree of infection and the nearness of the process to the surface whether the pleura is affected little or much. I remember a case where there was a slough of the whole middle lobe of the right side with an empyema totale. In another milder case it would not have to go so far and a serous exudate would occur.

Dr. S. M. WHITE: Was drainage kept up for some time?

Dr. BERGLUND: No, it was not; only for one day, then it went down to a very small amount.

Dr. WHITE: Was the sputum watched for a considerable length of time for fibres? If infected for that long a time, one would be likely to get gangrene.

Dr. BERGLUND: It could not be an abscess formation because we were watching for elastic fibres but did not find any.

Dr. FRANK BURCH (St. Paul) reported a case of cystic hemangioma of the upper eyelid in a little girl, and also a heart case with optic involvement.

Dr. ARNOLD SCHWYZER (St. Paul) reported the following case:

I want to report a case we operated upon this morning. The patient, a woman, had had headaches for a long time and two years ago suffered what was considered an apoplectic stroke. She was unconscious, foamed from the mouth, and the next day it was noticed that she could not see. She seemed blind in the left eye and almost totally blind for two weeks in both eyes, according to her sister's statement. She was then treated a long time for severe headaches, and up to now had used headache remedies without intermission every day.

After a year she consulted Dr. Binger, of St. Paul, for her eyes. The x-ray showed a tumor of the hypophysis area reaching far above the sella turcica. On account of this large size and the inaccessible location, x-ray treatments were given, which for a time seemed to improve the sight. Of late the improvement was lost again and the pain in the head became worse.

Dr. Binger then kindly referred the case to me, though I advised him to turn the case over to somebody with more experience in this field. This same proposition was made to the patient's relatives; but they asked me to operate and I, probably somewhat rashly, promised to study the case and see what could be done. The examination which I made showed that the left opticus was entirely white; the right one also showed a white atrophy, perhaps not quite so severe. In pituitary growths there is a bitemporal hemianopsia. The tumor bulges in front of the chiasma of the optic nerves and pushes the nerves sideways. The inner fibres are therefore more and earlier affected. They lead to the nasal areas of the retina and thus cause temporal amblyopia which gradually increases. In our case, when the right eye was examined, the moving hand was not seen when coming from the outer field until it reached the midline. From there on nasally it was well seen, though at best the patient could see fingers at two feet. On the left eye we noticed something surprising. When we moved the hand over the nasal field, the patient did not have any perception of it. As soon as we reached the midline she recognized a motion and in the lateral field she also had some perception of this motion. In other words, the left half of each retina was amaurotic.

Now if you remember that only the inner half of the retinal fibres cross to the other side in the chiasma, while the fibres coming from the outer half of the retina remain uncrossed, you will see that this finding speaks for an injury to the left tractus opticus behind the chiasma, where the left outer and the right inner retinal supply runs. But in addition we had found that the whole left eye was nearly blind. A pressure from the left side of the chiasma which would compress the left side of the chiasma together, with perhaps the left optic nerve and the left tractus opticus, would explain our findings perfectly.

A stereoscopic roentgen picture showed the tumor, which was the size of a walnut but somewhat oblong vertically, to rise from behind the left anterior clinoid process and reach vertically upward. It was definitely not in the midline. But what was it? While studying all this, the husband of the patient, on whom I had operated a few months ago for a tumor of the cerebello-pontile angle (and whose case I reported to you) dropped in to the office and reported that his wife had gained 25 pounds and that her eyesight had returned so that she was reading books and newspapers "all day long," and that she could again walk somewhat without assistance. This made us more ready to undertake the operation of this tumor of the left suprasellar area. As a guide for the approach, we had Adson's article on intracranial operation of hy-

pophyseal tumors, to be found in the Supplementary Volume of Keen's Surgery. It is a jewel of American surgical literature; clear, excellently illustrated, and fascinating. (Blackboard diagram of operation was given. X-ray films were shown.) A large parietal craniotomy was made on the *right* side, though the tumor was to the left of the midline, because we did not want to disturb the motor center of speech. The frontal brain was lifted up and gradually, very gradually, the brain was allowed to mold itself so that the orbital roof, chista galli, etc., became visible. Then the tumor was felt to be an aneurysm. Nothing further was done; the wound was closed. The whole operation was done in local anesthesia.

Note: Twelve days after this operation we ligated the common carotid artery—also in local anesthesia. Twelve days after this second operation she went home. The patient is emphatic in her statement that the headache and pain in the right jaw are gone and that she is better "in every way." The vision is not much improved so far; perhaps the time is too short; however, fingers were counted at five feet when she left the hospital.

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DR. A. E. BENJAMIN (Minneapolis) read a paper on "Primary Amenorrhea, with report of a case of Uterine Leiomyoma and Ovarian Fibrosis." (Specimen shown.)

#### DISCUSSION

DR. J. L. ROTHROCK: It seems to me that the explanation of this case is that there was to start with a rather high degree of hypoplasia and that the ovaries did not function; perhaps there were very few primordial follicles. There may have been a hypoplasia of the uterus with deficient endometrium. It has been shown that amenorrhea does not preclude fibroids of the uterus. A great many authorities think a hyperplasia of the uterus makes it more susceptible to tumors. A. Mayers says that 30 per cent of carcinomata of the uterus occur in women who never menstruated until after sixteen, indicating hypoplasia. We are apt to associate the development of the tumors with a large vascular uterus, but that does not always obtain. We often have difficulty in making a diagnosis between pregnancy and tumor associated with amenorrhea. I once saw a case of abdominal tumor and when I had the abdomen open I did not know whether or not it was pregnancy. It proved to be a soft fibroid.

I recall another very unusual case. The patient never menstruated but once in her life and she recently gave birth to a child. She is now about 22 years of age. I also recall another patient who, at the age of 45, ceased menstruating for one year. She consulted me because of pain in the abdomen. I found what proved to be a 4-months pregnancy; she went on to term and was delivered of a living child.

It seems to me the most likely explanation of this case is from hypoplasia of the organs and later a fibroid developed in the uterus.

DR. BENJAMIN: I have nothing special to add. This

was a rather atypical case. Here was a woman with a uterus fairly well-developed; the uterine cavity with no endometrium. This tumor must have begun to grow early in life.

Owing to the absence of Dr. Wm. Lerche, his report of a case of Hodgkin's disease of the neck and mediastinum was not read.

The meeting adjourned.

CARL B. DRAKE, M.D.,  
Secretary.

## PROGRESS

Abstracts to be submitted to Section Supervisors.

Members are urged to abstract valuable articles which they run across in their reading and send the abstracts to the physicians in charge of the respective sections. In order to avoid duplication it would be well to communicate with one of the section supervisors before the article is abstracted.

## SURGERY

### SUPERVISORS:

DONALD K. BACON,  
LOWRY BLDG., ST. PAUL

VERNE C. HUNT,  
MAYO CLINIC, ROCHESTER

THE THERAPEUTIC VALUE OF IRRADIATION IN THE TREATMENT OF MAMMARY CANCER: Burton J. Lee (Ann. of Surg., v. 88, pp. 26-47, July, 1928). This analysis of results in 355 cases of mammary cancer treated at the Memorial Hospital, New York, in 1920 to 1923, represents an effort to determine the value of radiation therapy either in conjunction with radical surgery or as the major form of therapy with or without palliative operation. The cases comprise 182 operable primary cancers and 173 inoperable primary cancers. Of these cases 97.2 per cent were traced over a five-year period. The groups are divided according to the major form of therapy used with certain necessary subdivisions in each group occasioned by variations in type and amount of irradiation employed. A clear description is given of different methods of roentgen treatment with low or high-voltage therapy and of the surface and interstitial applications of radium with a discussion of the limitations and the indications for each method. Such a consideration may seem technical and of little interest

to the general practitioner or surgeon, but, since the basis of intelligent discussion of irradiation therapy depends upon accurate definition of the methods and dosage used, it is particularly this careful analysis which is commendable in this survey.

Lee concludes that the treatment of carcinoma of the breast by irradiation alone or combined with radical surgery gives a higher percentage of satisfactory five-year results than when radical surgery alone is employed. Preoperative irradiation increases the percentage of satisfactory five-year results. For such preoperative treatment high-voltage irradiation is recommended with an interval of three to four weeks between treatment and operation. Postoperative irradiation has increased the length of life after operation and has yielded a higher percentage of five-year results than when radical surgery alone is employed. In cases treated by irradiation alone, radium has been found a more effective agent than roentgen rays. With either method, provided adequate dosage is used, marked diminution in size or complete disappearance of the tumor may be obtained. Gross and microscopic changes may be demonstrated in the tumor tissue. Suitable irradiation gives relief from pain, healing of superficial carcinomatous ulcers, improvement in the general condition, and prolongation of life.

FRANCES A. FORD, M.D.

A CONSIDERATION OF BLADDER TUMORS WITH SPECIAL REGARD TO THE THERAPEUTIC MEASURES BEST SUITED TO THE DIFFERENT TYPES: William A. Frontz, M.D., Baltimore, Md. (Surg., Gynec. & Obst., XLVII, 3, pp. 413-416). A paper based upon 622 cases of bladder tumor treated at the Brady Urological Clinic and reviewed in a previous paper by Drs. Scott and McKay.

The author feels that the treatment of bladder tumors should be based upon cystoscopic findings, and in this regard as to whether they are of infiltrating or non-infiltrating variety. Much confusion and difference of opinion has arisen regarding the type of treatment indicated because of diagnosis based upon histological findings which are actually of little importance in that tissues from one area of an infiltrating tumor may entirely resemble those of a non-infiltrating type. This is especially true when dealing with the so-called papillary carcinomata. The non-infiltrating variety will respond well and should be treated by endovesical measures—either radium or diathermy, or a combination of both. On the other hand, the infiltrating type should be resected if possible even though it be necessary to transplant the ureters. In those tumors where the vesical orifice or prostate is involved, or where the tumor is too extensive for resection, radium is recommended. Cautery should be limited to surface destruction preliminary to resection or radiation. Deep x-ray therapy has been of little value except in the relief of pain.

H. R. FEHLAND, M.D.

## PEDIATRICS

### SUPERVISORS:

CHESTER A. STEWART,  
LA SALLE BLDG., MINNEAPOLIS

ROY N. ANDREWS,  
MANKATO CLINIC, MANKATO

**HEMORRHAGE OF THE SUPRARENALS IN THE NEW-BORN INFANT:** M. A. Goldzieher, M.D., and H. M. Greenwald, M.D. (*Amer. Jour. of Dis. of Children*, August, 1928). The occurrence of destructive hemorrhages in the suprarenals of the new-born infant is well known and has been extensively discussed. In the later period of early childhood, the clinical syndrome is more amenable to observation and diagnosis.

Hemorrhages of the suprarenals in adults or in older children are brought about by a thrombosis of the suprarenal veins, by bacterial infections or by the effect of toxins. In the new-born infant it is reasonable to assume, therefore, that bleeding is brought about by trauma and unusual susceptibility of the suprarenals to hemorrhage. The latter may be explained by the peculiar physiologic changes which the suprarenals undergo immediately after birth.

The two outstanding symptoms in both of the cases reported by the author were hyperpyrexia and dyspnea. It appears that the height of the temperature and the degree of dyspnea are in direct proportion to the amount of cortical tissue destroyed. Cyanosis was observed in both patients.

Suprarenal hemorrhage in the new-born infant can be diagnosed from its symptoms, such as sudden onset of high temperature and rapid breathing, and occasionally by the presence of a palpable tumor in the abdomen, or by punctiform purpuric hemorrhages of the skin or mucous membranes. Exsanguination or intestinal obstruction may justify surgical intervention; otherwise, patients with the symptoms of acute cortical insufficiency should be treated by continued administration of the cortical hormone.

R. N. ANDREWS, M.D.

**THE CEREBROSPINAL FLUID OF PREMATURE INFANTS:** Jerome Glaser, M.D. (*Amer. Jour. of Dis. of Children*, August, 1928). The most frequent cause of unsuccessful lumbar punctures in premature infants is the pushing forward of the loosely attached dura of the posterior wall of the spinal canal by the entering needle. Unsuccessful lumbar punctures will occur much less frequently if the tap is made with the child sitting in an upright position and when a fine hypodermic needle is used.

Bloody spinal fluid obtained from these infants is suggestive but not diagnostic of intracranial hemorrhage. The most common form of intracranial hemorrhage in premature infants is the subpial hemorrhage. Fatal cerebral hemorrhages may occur in premature infants without the appearance of gross blood or even an exceptional number of microscopic red blood cells in the spinal fluid.

Xanthochromia is a physiologic phenomenon in premature infants during at least the first four weeks of life. The icterus index of the cerebrospinal fluid of premature infants is highest during the second week of life. More than half of the yellow spinal fluids of these infants give a positive indirect van den Bergh reaction. Yellow spinal fluids occur with a relatively high icterus index, which give neither a positive benzidine test nor a positive van den Bergh reaction. The color of these fluids is presumably due neither to hemoglobin nor to bilirubin but probably to a pigment or pigments intermediate in composition between these two.

A positive direct van den Bergh reaction of spinal fluid is strongly suggestive that the patient has had an intracranial hemorrhage. It may, however, occur in "kern icterus" without cerebral hemorrhage.

Cerebral hemorrhage probably contributes to the degree of icterus neonatorum, and unrecognized cerebral hemorrhage is perhaps the cause of some cases of so-called "physiologic" icterus neonatorum.

R. N. ANDREWS, M.D.

**ACRODYNIA (SO-CALLED):** James W. Kernohan, M.B., and Roger L. J. Kennedy, M.D. (*Amer. Jour. of Dis. of Children*, August, 1928). The etiology of the disease is not known. Infections, food deficiency, arsenical intoxication and neurosis of the vegetative nervous system have been suggested as etiologic factors.

There is abundant evidence against the theory of food deficiency. The preponderance of opinion regarding etiology at present favors infection, although it must be admitted that the evidence which has been brought forward in substantiation is in no way conclusive. The prognosis is usually good. Recovery may not be complete before several weeks or months, but the little patients seldom succumb. If death does occur, evidence of intercurrent infection, chiefly bronchopneumonia, is usually found.

The falling out of the teeth without a distinct involvement of the gums, the falling out of the hair and a double neurokeratitis point quite clearly to an involvement of the fifth nerve. The paresthesia of the extremities and of the trunk also suggests a sensory nerve involvement. The muscular weakness and atrophy, the diminution of the reflexes and, at times, their complete absence suggests involvement of the lower motor neurones. There seems to have been a preponderance of sensory manifestation with a mild affection of motor nerves.

There is a degenerative process affecting the central and peripheral nervous systems. This is evident in the spinal cord as chromatolysis of some of the anterior horn cells. The cerebral cortex and cerebellum do not participate in these changes.

The frequent association of this disease with infection of the upper respiratory tract and the degenerative character of the changes in the nervous system favor the view that the disease is an infection, the toxic products of which secondarily affect other parts of the body.

R. N. ANDREWS, M.D.

## EYE, EAR, NOSE AND THROAT

### SUPERVISORS:

VIRGIL J. SCHWARTZ,  
PHYS. & SURG. BLDG., MINNEAPOLIS

E. L. ARMSTRONG,  
205 W. 2nd STREET, DULUTH

**THE TONSIL PROBLEM:** Richard Waldafel, M.D., clinical assistant, Vienna, Austria (Arch. of Otolaryng., Vol. 8, No. 2, p. 127). This research problem deals with the physiology and pathogenesis of the tonsils. The investigations were made in the clinic of Professor Hajek and centered around the lymph stream drainage to, in and from the tonsils. The occurrence of tonsillitis following endonasal operations led to the opinion that the lymph stream courses from the nose to the tonsils, and that the latter are the regional lymph nodes of the nasal mucosa. Schlemmer made histologic, experimental and clinical studies of the problem. He determined that neither the palatine tonsils nor the remaining lymph tissue of the pharynx possess afferent vessels. Injection of a dye into the tonsil showed that the dye was transported only to the regional glands of the neck and never toward the pharynx. This was evidence against the theories which assume the presence of a pharyngeally directed lymph stream and a protective action of the tonsils in this sense. Carcinoma of the sinuses, turbinates, pillars and uvula cause metastases in the regional lymph nodes but never in the tonsils. These results proved that a tonsillar disease coming from the nose by way of the lymph stream does not exist.

In the subsequent investigations by the Viennese Clinic the problem was attacked from the bacteriologic standpoint. The following conclusions were reached:

1. Tonsillitis cannot be transferred by inoculation from tonsil to tonsil or by the transfusion of blood from diseased to healthy persons.
2. The phagocytic power of the patient's blood against the streptococci cultivated from the patient's tonsils increases in direct ratio with the stage of healing, and the resistance of the organism against these streptococci increases likewise.
3. The streptococci in persons with tonsillitis are not accidental and secondary symptoms but are in close relation to the disease and its course.
4. Lacunar tonsillitis is not a superficial disease but is a deeply extending destructive disease of the tonsillar parenchyma. The pictures correspond to the phlegmonous stage of appendicitis described by Aschoff. It is not a simple catarrhal infection. The opinion is gaining force that the infection courses from the depth of the tonsil to the surface. The older prevailing opinion was the reverse.
5. The function of the lymph follicles is not exclusively, if at all, centers of production of lymphocytes.

ARTHUR C. DEAN, M.D.

**A CASE OF DOUBLE DIABETIC CATARACT. EXTRACTION AFTER USE OF INSULIN TREATMENT.** Ellena Puscariu, et al. Roumania (Brit. Jour. of Ophthal., October, 1927). The use of insulin for a variety of ocular complications of diabetes has been attended with excellent results in many cases. The power of accommodation has been increased; retinal edema and lipemia have been quickly dispelled; the small white patches have been absorbed; incipient diabetic cataract has been cleared. It would seem that insulin helps to re-establish the saline equilibrium and to oppose the acidosis of the aqueous. In mature diabetic cataract insulin improves the patient's general condition and aids in preventing such complications as iritis, sepsis and delayed healing. Very mild cases require only dietetic regulation, but in severe cases insulin is indispensable.

The author's patient came under observation in serious general condition due to a relatively far advanced diabetes, and with only light perception in each eye due to cataract. Three weeks of dietary regimen did not reduce the glycosuria (250 grams in 24 hours). After seven days of insulin, however, the right lens was extracted in the classical manner, without complication, and four days later the left was removed. Lens remnants and a synechia kept the vision down to 0.1 in the left eye, but in the right the corrected vision became 0.7. During this time a standard diet of 1,600 to 1,800 calories was used, including 150 grams of carbohydrates. Large doses of insulin were used. On the days of operation only milk, tea and oatmeal were allowed. In this way the complete disappearance of sugar from the urine was obtained, and while this situation was only transitory owing to the patient's refusal to live on a strict diet, it was possible to complete the operations in both eyes.

VIRGIL J. SCHWARTZ, M.D.

*Squibb's Vitavose.*—A maltose-dextrin preparation representing the water-soluble extractives of malted wheat germ. It is composed, approximately, of maltose, 38 per cent; dextrans, 20 per cent; soluble proteins, 8 per cent; soluble amino and other nitrogenous substances, 7 per cent; mineral salts, 4 per cent; moisture, 3 per cent. It is standardized physiologically to contain at least 100 times the amount of the antineuritic factor (vitamin B) contained in fresh, raw, certified, whole cow's milk. Vitavose is used as an adjunct in the diet of children and invalids and where there is a need for greater amounts of vitamin B than are furnished by the individual's customary diet. S. R. Squibb & Sons, New York.

*Glaseptic Ampoules Ephedrine Sulphate-P. D. & Co., 0.05 Gm. (3/4 grain), 1 c.c.*—Each ampoule contains ephedrine sulphate-P. D. & Co. (New and Non-official Remedies, 1928, p. 178) 0.05 Gm. in 1 c.c. Parke, Davis & Co., Detroit. (Jour. A. M. A., June 30, 1928, p. 2103.)

## BOOK REVIEWS

Books listed here become the property of the Ramsey and Hennepin County Medical libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

**GONOCOCCAL URETHRITIS IN THE MALE.** For Practitioners. P. S. Pelouze, M.D., Associate in Urology and Assistant Genito Urinary Surgeon at the University of Pennsylvania. 357 pages, 78 illustrations. Cloth, \$5.00. Philadelphia: W. B. Saunders Company, 1928.

The author of this book has given his conception of the disease gonorrhea in a comprehensive manner. Possibly the book might be more readable had the author adopted a less argumentative tone. Be that as it may, if the general practitioner, who, after all, treats, or, as some have said, mistreats most of the gonorrhea, would read this book, the result would, in all likelihood, be better treatment for the patient with gonorrhea. The fact that the author stresses what not to do and when, as well as what to do and why, is probably the thing that should impress the practitioner the most.

After all, the thing that causes the most difficulty in gonorrhea is the attitude of the patient himself. The concept of the patient of his disease is often the greatest obstacle to its intelligent management. And the way of bringing about a better understanding of the disease lies in the general practitioner's understanding. A reading of this book will enhance such understanding.

EDWARD C. GAGER, M.D.

**A DOCTOR LOOKS AT DOCTORS.** Joseph Collins, M.D. 32 pages, \$1.00. New York: Harper Brothers.

This little volume, with its bright calico cover, will provide a pleasant and educational hour's reading for the busy physician and in its pages he may catch a glimpse of himself as others see him. It is evidently a reprint of a magazine article and the material is really insufficient to be issued in book form.

In his youth Dr. Collins had some obscure lung condition, probably an empyema, which left physical signs that were variously interpreted, usually as tuberculosis, by the numerous well-known physicians whom he consulted at later periods in his life. He became much impressed by the impersonal attitude of the various men of healing and by their inability to consider the ailment in conjunction with the individual and his habits of living. Of all these men, the one exception was the great Osler, who started him on the road to recovery. Of physicians he says, "They do not see the individual because they are dazzled by the disease . . . they are prone to occupy themselves with the theoretical requirements of a case so that they lose sight entirely of the human being and his life story . . . to understand disease one must know physi-

ology; to understand its possessor, one must know psychology."

The author further makes a plea for training along these lines for the medical student in college, so that he may not make the same mistakes, but may know and utilize to the fullest extent the art of medicine, that he may understand his patient as well as the patient's disease, that he may be an understanding and compassionate man as well as a physician. If that be accomplished not only will he have a long life of interest and success but he need have no fear of the cults.

**INTERNATIONAL CLINICS:** Vol. III, Thirty-Seventh Series; September, 1927. Henry Cattell, M.D., Editor. 309 pages. Illus. Philadelphia and London: J. B. Lippincott Co., 1927.

Theobald Smith has an article on the Passing of Disease from One Generation to Another and the Processes Tending to Counteract It, which will interest pediatricians and those interested in immunology. Articles on diagnosis and treatment cover such subjects as Heart-Block, Colitis, Buerger's Disease, Gallbladder Disease, Peptic Ulcer, Anemic Spinal Diseases, and Meckel's Diverticulum. There is a long article on Pneumococcus Meningitis and Endocarditis with many case reports and a long bibliography. Surgeons will be interested in a paper on Deformity-correcting Splints for Fractures of the Long Bones. Kielland Forceps and Vesicovaginal Fistula are discussed, giving a higher opinion of the forceps than is generally felt at the present time. The varied interests and functions of the U. S. Public Health Service are related in a paper by A. M. Stetson, of the Service.

The new Post-Graduate Study department, devoted to the answering of questions from readers, contains much interesting material.

Not least in interest is a most delightful paper on Greek Medicine by John Rathbone Oliver. He quotes from Lucian an astonishing urological case: "Diophanthes with the hydrocele, when he wants to cross to the other side of the river, never gets into the ferryboat, but putting all his packages and his donkey on his hydrocele, and hoisting a sheet, he sails across. In vain then have the tritons glory for their feats in the water, if a man with a hydrocele can do as well, if not better."

E. C. HARTLEY, M.D.

**MODERN METHODS OF TREATMENT.** Logan Glendening, M.D., Assoc. Prof. of Medicine, Medical Department, University of Kansas, and collaborators. 815 pages. Illus. Cloth, \$10.00. St. Louis: C. V. Mosby Co., 1928.

In general the lecturer and essayist appear to the student as a host who spreads a sumptuous dinner before his guests but omits all means for eating it. The guest feels that it would be discourteous to inquire after so slight an omission and proceeds, with what grace he can summon, to nourish himself with

the material before him. So the poor medical student wanders along gathering, figuratively, a knife here, a fork there, a spoon elsewhere until at length he can do justice to the undoubted feast which his instructors have set before him. Not only does the author of this book supply the "knives and forks" of treatment, but in his preface he commits himself to several alluring propositions: (1) to make a method of procedure clear and minute enough so that a person reading it for the first time could do it from the description, and (2) to avoid "atrocious English and a style of deadly boredom." The average reader will feel that success has crowned his efforts.

The book contains 815 pages and is in two parts. Part 1 is on general therapeutics and methods used in treatment; part 2 deals with special therapeutics—the application of therapeutics to particular diseases. Historical data on the introduction of certain drugs are frequently given in the words of their original users. Thus Fracastorius tells poetically of quicksilver for syphilis; Withering's own words describe his initial efforts with

foxglove, and the author meditates characteristically upon Lady Webster's dinner pill, visioning her "in the baronial castle giving endless dinners and dispensing endless pills, with the benevolent despotism of a strong-minded dowager who has suddenly in mid-age become intensely interested in the large intestine."

A full 100 pages are devoted to dietetics. These include infant feeding, hospital diets, dietary treatment of various diseases, food compositions and vitamins and calory content of many foods.

Hydrotherapy, medical gymnastics and massage and exercise are described and their uses indicated. Indications for the use of x-ray and radium are given, with methods and dosage. There is a chapter on heliotherapy, climate, and the nature and location of a number of mineral springs. There is a most interesting and readable chapter on Psychotherapy. The indications, purposes and technic of such measures as artificial pneumothorax, spinal puncture, gastric lavage and duodenal drainage, resuscitation, transfusion, etc., are presented with clearness and detail.

E. C. HARTLEY, M.D.

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# MINNESOTA MEDICINE

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## PELLAGRA AND ALCOHOLISM\*

S. E. SWEITZER, M.D.

*Minneapolis*

PELLAGRA first appeared<sup>1</sup> in the United States in 1902. Since then it has been common in the southern and relatively rare in the northern states. In Minnesota it is rare. In an experience of over twenty years at the University only two cases were seen, and only one case is recorded in the last eight years at the Minneapolis General Hospital.

O'Leary<sup>2</sup> reports 98 cases seen at the Mayo Clinic in the last ten years, and only seven of these were from Minnesota.

Recently a small epidemic has occurred in Minneapolis, and seven cases were seen in a few

pellagra occurring in alcoholics, and emphasized the rôle that alcohol plays in this disease.

From the original report of Casal in 1762, and in various reports of commissions and individuals in Italy, Spain, and France, alcohol is mentioned as one of the causes of pellagra.

Early in the history of pellagra, a theory was advanced that the disease was caused by eating spoiled maize. This was called the Zeist theory and held sway for many years, although even then many cases were reported that had no connection with the eating of maize. These cases were called pseudo-pellagra by the proponents of



Fig. 1. Pellagrous dermatitis of hands in Case 1. Patient had been on a prolonged debauch, and came in with a bullous eruption of the hands. Through a mistake a photograph was not taken until the bullæ had gone. Skin under the bullæ showed very pink with some black crusts at edges.

weeks at the Minneapolis General hospital. During this same time one case was seen in my private practice.

*Theories of Causation.*—Klauder and Winkelman<sup>3</sup> in a recent paper reported 100 cases of

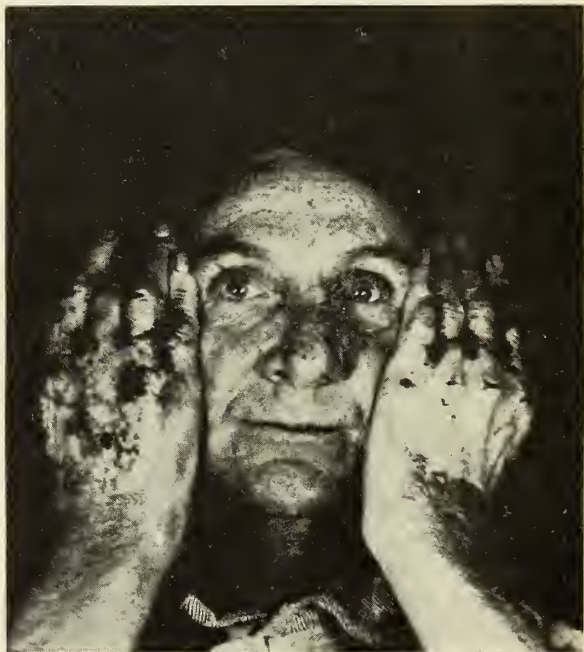


Fig. 2. Case 1 showing hands and face. Face was intensely red in spots.

the Zeist theory. The alcoholic cases, and cases among the insane, were included in this designation.

\*Presented before the Minnesota Academy of Medicine, September 12, 1928.

At the present time the Zeist theory has given way to the theory of dietary deficiencies, but there are still some unknown factors in the etiology of the disease. Crutchfield,<sup>4</sup> in a recent article, reviewed 109 cases of pellagra, and came

dry pigmented eruption on the backs of the hands.

The face and neck were involved in a few cases and showed a brilliant red.

*Mouth Symptoms.*—These, while not always



Fig. 3. Large bullae present on admission in Case 2.

to some interesting conclusions. He stated that "Pellagra is rarely seen in patients not suffering from some previous contributory disease which disturbs metabolism."

The rôle that alcohol played in our cases was probably as a disturber of nutrition, as all but the private patient were vagrants and had been on protracted sprees for weeks and months.

*Symptoms.*—There are four cardinal symptoms of pellagra: (1) skin manifestations; (2) mucous membrane involvement; (3) diarrhea; (4) mental symptoms.

In making a diagnosis it is not necessary to have all of these symptoms present.

*Skin Manifestations.*—All our patients showed cutaneous involvement located on the back of the hands. Some few had the feet involved and also the face and the V of the neck. Several cases seen early showed gigantic bullae over the backs of the hands and fingers. These were the largest bullae that I have ever seen, except in a few cases of *dermatitis venenata*.

After the fluid was let out of the bullae, there was present a sharply limited, crusting eruption, brownish to black in color, and in some cases showing deep fissures.

On removal of the crusts by prolonged soaking with wet packs, the skin was of a pinkish hue.

Patients seen later in the disease showed a



Fig. 4. Case 4. Patient, on admission, showed very dark, sharply limited eruption on back of hands.

present, consisted of a blood-red tongue or red edges.

*Diarrhea.*—All but one patient had a severe diarrhea of an intractable type.

*Mental Symptoms.*—These men were all of a low grade of mentality and under the influence of liquor when admitted. Only one had any definite mental symptoms.

*Diagnosis.*—The first case was diagnosed *dermatitis venenata* in the clinic, and only after admission to the hospital was a diagnosis made of pellagra, as the diarrhea was then discovered. In this patient a history was at first impossible, as he was both drunk and lethargic mentally.

The succeeding cases were very readily recognized from the typical eruption on the back of the hands, diarrhea, and tongue involvement.

An interesting feature of the hospital cases was that these men all knew each other, all came from the Bridge Square district, and all obtained their alcohol from the same source. They obtained denatured alcohol from a hardware store and got very drunk for twenty cents. One or two admitted getting "canned heat" and drinking that.

My private patient was a fat, prosperous man of 55, living in the country. He came in very drunk, and said that he had drunk all his life.

He presented a dry, pigmented, sharply defined eruption on the back of both hands, also a very red tongue..

#### CONCLUSIONS

In this small series of cases of pellagra reported from Minnesota, the rôle of alcohol as an

etiological factor is striking. It probably acted as a disturber of metabolism, but there must be some other factor present, as in previous years much alcohol was drunk, and we did not have pellagra.



Fig. 5. Case 4. Vitiligo like eruption on neck. This appeared after a week in the hospital.



Fig. 6. Pigmented and scaling eruption in Case 7.

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#### DYNELL WATER

In Palos Park, Illinois, a suburb of Chicago, there is a concern known as the Dynell Spring Water Co. For the past few years, "Dynell Spring Water" has been advertised by methods that are more reminiscent of "Peruna" and "Lydia Pinkham" than of mineral waters. Dynell Water, if we are to believe the advertising—which is not advised—is the remedy *par excellence* for appendicitis, arthritis, asthma, Bright's disease, bladder trouble, and so on. According to an analysis, Dynell Water has, for its chief active ingredients, sodium sulphate (Glauber's salt) and magnesium sulphate (epsom salt). Included in the advertising are what are alleged to be testimonials of two physicians, who are members of the Chicago Medical Society, and a testimonial credited to William Hale Thompson, mayor of Chicago, and widely known in other ways. (Jour. A. M. A., September 15, 1928, p. 818.)

#### THE PREVENTION AND MODIFICATION OF MEASLES

Two years ago it was announced that protection was secured in 85 per cent or more of susceptible persons exposed when convalescent measles serum was administered before the fifth day after exposure to measles and that in some cases the disease was modified when the serum was given as late as the seventh day. It has been attempted to produce a serum from animals by using the diplococcus isolated from patients with measles. Results have been reported from the use of such a serum developed in horses; but the production of immune goat serum seems even more promising. It is to be remembered, however, that the protection thus conferred is only transient. Active immunization with a toxin prepared from the causative organism of measles remains to be successfully accomplished. In Chicago a committee has concluded that as a general practice it is doubtful whether the immunization of all children exposed to measles is desirable. (Jour. A. M. A., September 15, 1928, p. 803.)

## ACUTE NON-EPIDEMIC INFECTIOUS PAROTITIS\*

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**A**CUTE non-epidemic parotitis is a disease which, while rare, is not so infrequent but what nearly every practitioner has seen one or several cases. For some reason, perhaps because the condition occurs only as a complication, it is seldom reported. Parotitis occurs either as a postoperative complication or as the sequela of one of the acute infectious diseases. It is synonymous with "suppurative parotitis," "parotid phlegmon," and "sympathetic parotitis" of the older writers.

In references prior to 1915 it would seem that the majority of the cases occurred as a complication of typhoid, typhus, or scarlet fever, and its predilection to occur in debilitated individuals was well recognized. Since that time, however, most of the reports emphasize it as occurring either postoperatively or following pneumonia.

In pneumonia it resembles herpes labialis, in that it more commonly presents itself on the same side as the pulmonary lesion. As a postoperative complication it seems especially prone to follow either suppurative conditions of, or operations upon, the female genito-urinary tract. However, it has been reported to have followed thyroidec-tomy, stomach and gallbladder surgery, or as minor a procedure as catheterization. The incidence of this disease is very difficult to estimate as there are no large series of cases reported. Beckman at the Mayo Clinic found it occurring only three times in 6,800 operations, two of these following gynecological operations. We do not believe, however, that this is representative of its incidence in the smaller hospitals. In conversation with a dozen or more general practitioners we did not find one who had not seen at least one case in the last five or ten years.

Many theories have been advanced in explanation of the occurrence of this malady. The earliest hypothesis is expressed by the term "sympathetic parotitis," namely, an enlargement of the parotid gland out of sympathy with disease elsewhere in the body. This was not abandoned until bacteriology developed. In more recent years, two theories have vied for acceptance, the older

professing the parotitis to be hematogenous in origin, arising as a metastasis from the primary area of suppuration. More recently, in the cases following pneumonia or suppurative abdominal disease, the bacteriologies of the two areas have been compared and found in the majority of cases to be due to pure strains of dissimilar organisms. This is illustrated by a pneumococcus pneumonia that is complicated by a parotitis which on culture yields only the streptococcus. This finding, in the majority of cases at least, seems to refute quite conclusively the hematogenous theory. In consequence it is the more prevalent conception today that the parotitis is due to an ascending infection of the parotid duct followed by its plugging and consequent inability to drain. As indirect evidence of the correctness of this viewpoint, work has been done on the physiology of salivary secretions, proving that movements of the jaw, such as chewing, causes, by the action of the muscles in that region, a stripping or milking action of Stenson's duct. Therefore, any condition accompanied by immobility of the jaws and relaxation of their muscles such as general anesthesia or extreme toxemia will remove the mechanical action which prevents infection of the parotid gland by way of its ducts. Mouths that have excessive numbers of bacteria, as seen in pyorrhea, will numerically increase the likelihood of parotitis. In a similar way any general condition in which bodily resistance is lowered, as in diabetes or malnutrition, will increase the likelihood of this complication. Thus there are three factors that predispose to this disease: a decreased bodily resistance to infection, chronic oral infection, and muscular relaxation.

The extent and the severity of the disease vary with the individual case. It always starts as a unilateral infection but may at any time become bilateral. The onset is that of an acute suppurative process. There is an abrupt rise of temperature to 103 or over, general malaise, frequently chills, and always pain over the parotid gland. Occasionally, especially in children, there is delirium. Examination at this time is negative except for the pain and tenderness over the parotid gland. A white cell count will reveal a

\*Read at the staff meeting, Lakeview Memorial Hospital, Stillwater, Minn., May, 1928.

marked polymorphonuclear leukocytosis. In six to twelve hours the gland becomes visibly swollen and exquisitely tender. This swelling is of a hard, firm, indurated type, due to the heavy capsule that surrounds the gland except on its medial side. As the swelling increases, dysphagia appears, due to the encroachment of the gland on the lateral wall of the pharynx. In bilateral cases this encroachment may be so severe that the patient will be unable to swallow even liquids. Fluctuation is a variable symptom and due to the thick capsule is very difficult to elicit. It will not be found in the majority of cases, for it necessitates a single large abscess peripherally located, while as a rule we find multiple small abscesses scattered throughout the gland.

Treatment is preventive, symptomatic, or surgical. The preventive treatment is by far the most satisfactory and is usually incorporated in the usual measures of personal hygiene. This consists essentially in keeping the mouth reasonably clean, either by means of brushing the teeth or by a suitable mouthwash. In cases with pyorrhea and dental caries this should be especially insisted upon. Secondly, the patient should be encouraged to move his jaws: this is usually done for other reasons, but the prevention of this disease furnishes us with another reason for encouraging the postoperative patient to chew gum. When the disease first manifests itself, probing of Stenson's duct with a fine canula is often advantageous. This failing, either hot or cold packs may be used. Incision into the gland should be made either when fluctuation first appears, or, if this fails to develop, when dysphagia first becomes pronounced. Frequently no pus is obtained, in which case moist packs for twenty-four hours will usually start the drainage. With incision and drainage there is rapid relief of systemic and local symptoms. Tenderness and swelling decrease, the temperature falls, and the malaise disappears. Contrary to what one might expect, there is little tendency for the incision to form a permanent fistula and healing is usually complete in thirty days. There is no case that we have heard or read of in which the parotid plexus of nerves was injured in the incision for this abscess.

Prognosis should be very guarded, for the presence of this complication marks the patient as having a lowered general resistance to infection. There are no large series of cases and no definite

mortality figures reported, but one gathers the impression that from a third to one-half of the cases have ended fatally. Of the twenty-two cases summarized in the paper, six were fatal.

#### CASE REPORTS

Robinson reports the case of a man, aged 42, who had a left lobar pneumonia but who started to run a temperature the day after the crisis. On the third day of this fever swelling of the right parotid gland was noticed. Drainage was obtained and the incision healed in thirty-one days.

Parkinson reports a case in a boy of three years, in whom, seven days following the beginning of resolution of a right lobar pneumonia, the temperature rose suddenly to 104, and the following day there was a swelling of the right parotid gland. Two days following the onset, the gland was drained by a deep incision. The incision was healed in two weeks and the patient recovered. Smears of the pus showed a staphylococcus and pneumococcus. No sputum could be obtained.

Barrow tells of a case in a woman, aged 67, who, while recovering from a left hypostatic pneumonia, developed chills and fever and pain in the left parotid gland. Three days later the right gland became involved and both were opened. Pneumococci were obtained from the pus. The patient recovered, though both incisions were still draining two months later.

Dunn reports a case of a female, aged 67, with a right perinephritic abscess, who, two days after drainage, developed a left parotitis. The parotid was opened and pus obtained. The patient died. Smears from both abscesses showed streptococci and staphylococci.

Bartlett has seen five cases, of which three were bilateral. These three cases recovered. The two which succumbed had been operated on for traumatic rupture of the intestine and for pyosalpinx. The three which recovered included two operations for appendicitis and one Kraske with colostomy for a carcinoma of the rectum.

Fowler has seen this condition occur eight times following abdominal operations. In five of the cases the operation was upon the adnexa, and in two of the other cases for suppurative appendicitis. He observed only one bilateral case, and was fortunate in having no fatalities.

Blair has seen three cases, two of which followed operations for inflammatory conditions of the female adnexa, and the third following a laparotomy for an acute suppurative appendicitis. Two of his patients died.

We have observed two cases in the last year, one following an operation for acute suppurative appendicitis with abscess formation and the other occurring as a complication of pneumonia in a diabetic patient recovering from amputation of an extremity.

*Case 1.*—L. G., a male, aged 20, was admitted to the hospital Feb. 8, 1928, discharged March 9, 1928.

Admission diagnosis: appendiceal abscess.

The patient was operated upon the day of admission, and for the first two days did as well as could be expected. On February 11th, a painful swelling was noticed just below the right ear and the temperature, which had been normal for the past twenty-four hours, rose to 99.6. The following day the swelling had enlarged, was very tender to the touch, and the patient complained of its aching. The temperature had risen to 102.2 and a leukocyte count showed 35,850. Cold packs were applied. The mass not fluctuating, it was decided not to incise it unless the symptoms became more severe. On the following day, the 13th, it was noticed that while the temperature had continued high (102.8 at 8 a. m.) the mass was not so tense or so exquisitely tender to the touch. By evening the temperature had fallen to 99.6 and in five more days the mass had completely disappeared and the temperature continued to remain at the normal level. The remainder of the convalescence was normal.

This seems to represent the very mild form of parotitis in which symptomatic treatment alone was sufficient to overcome the infection and secure drainage by way of Stenson's duct.

*Case 2.*—B. W., female, aged 61, was admitted to the hospital Nov. 28, 1927, and died Feb. 2, 1928. This patient was admitted in diabetic coma brought on by dietetic indiscretions and aggravated by a moist gangrene and osteomyelitis of the distal half of the right foot. The patient was given the usual diabetic coma treatment, to which she responded very satisfactorily, being acetone-free in thirty-six hours. Owing to the patient's refusal to consider amputation and a consultant's advice to try conservative treatment, the foot was opened sufficiently to establish drainage and heat was applied. Progress was very unsatisfactory and finally in the first week of January the patient's permission was obtained for amputation just below the knee. This then was done immediately, and the patient made a slow but gradual recovery, the stump being almost healed the last of the month.

While the patient was up and around at this time she developed a low-grade broncho-pneumonia, and was put

to bed. On the evening of January 30th it was noticed that the temperature had risen to 103. No satisfactory reason could be found for this at the time. On rounds the next morning, however, a tenderness and swelling of the left parotid gland was noticed. Cold applications were applied. The following day the swelling was more extensive, red, and very tender to the touch. It was giving the patient a slight amount of dysphagia. No fluctuation could, however, be found. During the following night the pulse became weak and rapid, and she died at noon of the next day. This case, we believe, represents a more typical course of the disease under question. The rise of temperature to a high degree before the appearance of any localizing signs is typical, as is the progressive downward course if the abscess does not drain, either internally or through an incision of the skin and capsule. The question of drainage was considered and discussed in this case, but it was the consensus of opinion not to attempt surgery, for with her general condition (diabetes plus pneumonia) the outlook was poor, and from clinical appearances getting progressively worse. The patient and the family had a strong distaste for even the opening of an abscess. The absence of fluctuation, and the undoubtedly slow healing of any incision in this case, were all factors that deterred us from doing, what, in retrospect, seems to us would have been the more correct thing to do.

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# THE EFFECT OF SURGICAL OPERATIONS AND OF BANDAGING ON RESPIRATION\*

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IN the course of experiments designed to determine the factors influencing the mechanics of respiration and the relative importance of the several muscular systems involved, it became necessary to study the effect produced by the application of encircling the abdomen and thoracic wall by bandages. The treatment of animals operated on and the effects of the operation itself were studied before the bandages were applied. Accordingly, dogs were chosen on which an Eck fistula operation or an Eck fistula combined

reduction in the amplitude of movement of the thoracic wall, nor does it alter the symmetry of the chest itself; (2) it does not affect the movement of the diaphragm in either direction or the amplitude of its excursion. Even when as much as three-fourths of the liver had been removed, the only effect produced was in lowering the vault of the right hemidiaphragm, and the movements were not altered from normal either in direction or in amplitude of excursion; (3) the abdominal movement itself was decreased and

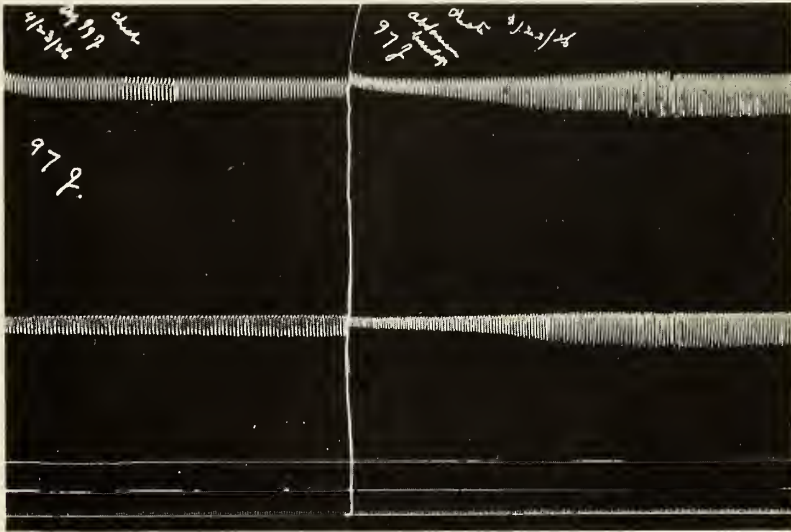


Fig. 1. Movement of chest at ensiform level with and without bandages to the abdomen. Increasing respiration effort is exaggerated more than is usually seen.

with the removal of a portion of the liver had been performed. These operations in the upper part of the abdomen were extensive and should represent the maximal effect of abdominal interference on respiration. All procedures were controlled by strict surgical technic and the animals were anesthetized with ether.

The animals were studied immediately on completion of the operation, and on successive days until the abdominal wounds were healed. The result of the observations led to conclusions as follows: (1) the reaction following upper abdominal operation does not cause noticeable

the limitation in amplitude was bilaterally equal, and (4) dyspnea was not produced and evidence of pulmonary congestion could not be obtained.

Bandages were first applied to the abdomen as high as the costal margins. The animals were examined when anesthetized and kymographic records were made by the technic described in a former study. The records confirmed the general examination and showed that abdominal movement was lessened and thoracic movement decreased at the level of the costal arch. The excursion gradually increased as the animal's effort to breathe under difficulty became greater.

Bandages were then applied over the abdomen and over the lower part of the thoracic wall as

\*From the Division of Medicine, The Mayo Clinic, Rochester, Minnesota. Submitted for Publication July 9, 1928.

high as the level of the ensiform. The observations were made at two points on the wall of the chest. The upper part of the chest seemed to maintain normal movements but the amplitude of the lower part could be reduced remarkably. The degree of reduction depended on the tightness of the bandage. When the bandages were

tion of the bandages to the abdomen alone reduced the movement of the abdominal muscles and also, to a small extent, of the wall of the chest at the ensiform level.

The bandages were then applied to the wall of the chest as well as to the abdomen and observations made both by inspection and by means of

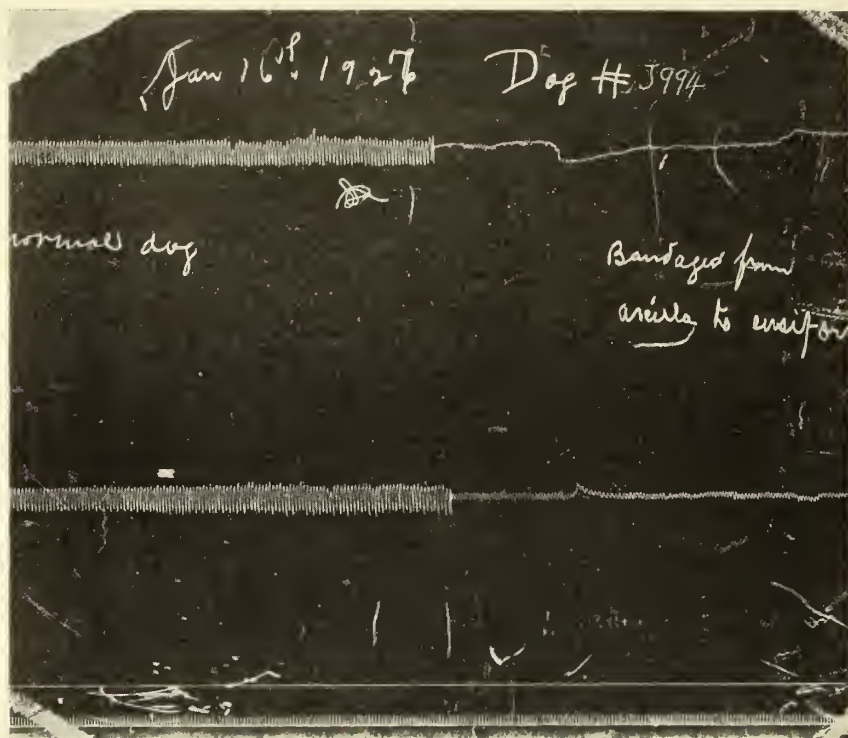


Fig. 2. Normal movement until bandages were applied. Almost total absence of movement after application.

removed, the amplitude of movement promptly returned to normal and the visible effort to maintain respiration disappeared. Even in the upper part of the chest, which showed normal excursion, the effort of breathing was always increased while the bandages remained in place.

As a result of these observations it was decided to study the effect of bandaging on normal animals. Inspection and kymographic records gave information of the normal movements at the level of the ensiform and over the costal arch. These records were used as controls. Snug bandages were applied to the abdomen and to the wall of the chest to the level of the ensiform. The level of the ensiform in the dog is relatively higher than in man so that too literal an interpretation of the observations cannot be applied to man. It is only the fundamental principles involved that can be applied. The applica-

kymographic records. Movements of the chest both at the level of the ensiform and at the costal arch were definitely reduced and the effort of breathing was materially increased. With removal of the bandages the respiratory excursion promptly returned to normal. Fluoroscopic examination of the animals was made in every instance but, without exception, the movement of the diaphragm was unaffected either by operation or by bandaging.

The bandaging was intended to simulate as closely as possible that applied to patients after surgical operation. It now became necessary to determine the maximal degree of compression to which the thorax could be subjected and still be competent to maintain respiratory function.

Normal animals were chosen whose thoraxes were bilaterally symmetric and whose respiratory movements were in all respects normal. They

were anesthetized and, after further observations to check the normal character of all movements, kymographic records were made at the level of the ensiform. These were used as a check against the general examination. Intrapleural tension readings were taken by using a pair of manometers as described elsewhere. In every

instance the animals used all the extra respiratory muscles available. The abdomen was distended and cyanotic but the muscles were functioning. Fluoroscopic examination proved that the diaphragm was pressed downward and moved normally although through a reduced excursion. The manometric readings of intrapleural pres-

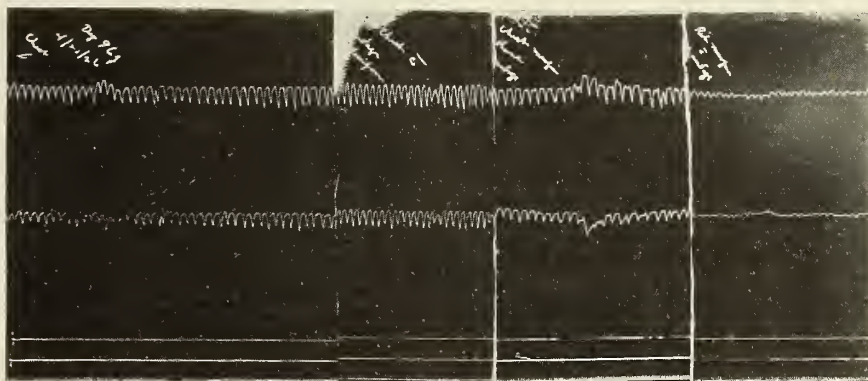


Fig. 3. Record of chest: 1, without bandages; 2, with abdomen bandaged; records were made with tambours in place at level of ensiform; 3, record of costal arch movement without bandage, and 4, records with bandage to abdomen and costal arch to level of the ensiform.

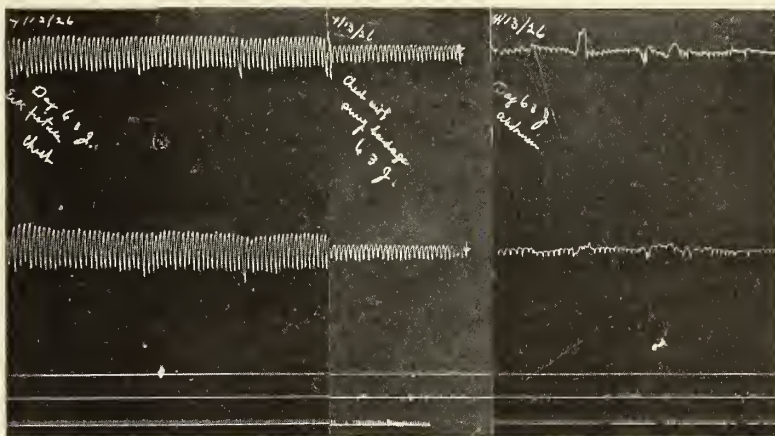


Fig. 4. Normal and equal movement of both sides of the chest: 1, without bandages; 2, with bandages, and 3, diminished movement of abdomen without bandage. Record taken the day following operation.

instance the readings were the same on the two sides, although there was variability in the degree of negativity in pressures in different animals. The difference between inspiratory and expiratory negativity was, however, less variable.

Tight bandages were applied to the chest from the highest possible point in the axilla to the lower limit of the costal arch. The compression was such that the circumference of the chest at the costal arch was reduced approximately 15 per cent. The breathing and pulse rates were increased by approximately the same percentage. Thoracic movements were almost entirely abol-

ished and the animals used all the extra respiratory muscles available. This observation held true in every instance; external pressure equally distributed over the whole chest does not affect intrapleural pressures. Kymographic readings made over the same area of the chest before application of bandages gave a graphic illustration of the reduction of thoracic movement under such a decided handicap. Animals could not live for more than a brief period. A number of times the bandages had to be removed before the series of observations was completed. Cyanosis became extreme over the

whole body. The abdomen distended, breathing became more and more labored until death became imminent from asphyxia.

Other experiments had shown that animals can maintain normal ventilation without respiratory

the abdominal muscles are forced out of function. If the abdomen and lower part of the chest are subjected to the restraining influence of encircling bandages, not only is the abdominal movement reduced as before, but the movement

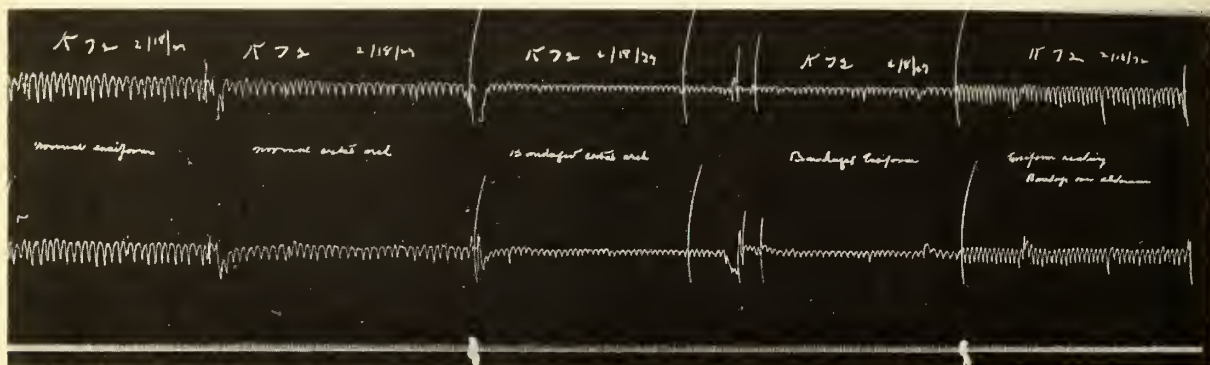


Fig. 5. Excursion of chest measured at ensiform level: 1, free of bandages; 5, with abdomen bandaged, 4, abdomen and wall of the chest bandaged to ensiform level; 2 and 3, records of movement of the costal arch with and without bandage applied.

embarrassment even when both phrenic nerves are evulsed and all the intercostal nerves are cut. These animals play about and are dyspneic only on unusual exertion. They maintain the ability to provide themselves with tidal air. This, the bandaged animals could not do. Inasmuch as the intrapleural pressures were little altered from normal, speculation might suggest that the increased respiratory rate was insufficient to ventilate the lungs. The respiratory pump could not have been interfered with since blood flowed into the thorax, perhaps at a reduced rate, due not to pressure on veins but to embarrassment of the heart. Such embarrassment is not present in animals operated on, as I have described. By fluoroscopic examination, however, the size of the auricles or ventricles seemed normal both during systole and diastole. Anoxemia and cardiac embarrassment seem to explain the cyanosis and collapse. Pressure on the chest, and not dysfunction of the musculature, is the most important causal factor of respiratory incompetency.

It has been shown that when dogs that have been operated on or normal dogs are subjected to pressure by encircling bandages, the degree of dysfunction to both the respiration and the circulation is dependent on two factors: the area to which the bandages are applied and the degree of tension. If the abdomen alone is bandaged, very little effect on thoracic excursion is produced, but the animal soon evidences fatigue and

of the lower part of the chest is definitely reduced, which under normal circumstances enjoys the greatest freedom of expansion. Fatigue again becomes evident. If the whole chest is encircled and the pressure is considerable, life itself is endangered and death may result, presumably from asphyxia, the combined effect of pressure on the respiratory and on the circulatory apparatus. Even transection of the spinal cord fails to produce such urgent respiratory distress, and extensive operative trauma to the wall of the chest or diaphragm falls far short of this crippling effect on respiration.

The inferences are obvious without an attempt being made to apply too literally experimental results on animals to the postoperative treatment of man. It is permissible at least to inquire into the necessity of large dressings in the after-treatment of undrained abdominal wounds, and it is safe to suggest that the already reduced vital capacity of patients following operation is further lowered by the lessening of respiratory excursion over the most important part of the chest. The consequences of such reduction not only result in fatigue but, in all likelihood, in passive congestion and circulatory impairment. When considered in relation with the well known fact that complete infarction does not occur except in lungs that have been injured by former disease or by passive congestion, the significance of a restriction even so seemingly unimportant is

evident. Infarction of the lung is one of the three most common and dreaded of postoperative complications.

One feels justified in suggesting that the comfort of patients would be increased, particularly in warm weather, by the application of the thinnest possible dressing compatible with its function

as a covering for a wound; that the dressing should be held in place by means of adhesive substances so applied that they cannot exert pressure effect, and that they be kept off the thorax entirely so that the respiratory excursion of the lower part of the chest may not be impeded (Figs. 1 to 5).

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#### VITAMIN A DEFICIENCY AND INFECTION

The susceptibility to infections of various kinds as affected by the adequacy or deficiency of diet with especial reference to the vitamins has attracted renewed interest. An increased susceptibility to tuberculosis has been shown in rachitic rats, species normally possessing a marked immunity to such infection. The long delayed effects of a mild deficiency of vitamin A "no greater than may readily occur within the range of ordinary normal or adequate nutrition" have been studied on rats. At the end of the experiment, autopsies were made and the incidence of infection was determined in all the rats. In the first group this was 25 per cent; in the second, 75 per cent. The only difference between the two groups was the dietary treatment of the mother and young up to the time of weaning, one series having plenty of vitamin A, while the other was somewhat limited in its supply. The similarity in the nutrition of the rat and of man permits these results to be translated into human age relationships and suggests that a difference in incidence of infection is to be expected among children of around 10 and 12 years, resulting from differences in the way they were fed before they were 3 years old. (Jour. A. M. A., September 29, 1928, p. 962.)

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#### CAUSYTH FOR RHEUMATISM

An article in an Austrian medical journal reports the use of "Causyth." No definite statement in regard to the composition of Causyth is contained in the article. The product is vaguely described as "zyklohexatrikupyridin sulfonsaures Pyrazolderivat." A note on the use of Causyth in grippe has also appeared in a German medical journal. The product does not appear to be marketed in the United States and no firm has requested its consideration by the Council on Pharmacy and Chemistry. (Jour. A. M. A., August 11, 1928, p. 418.)

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#### AVERTIN

Avertin (also referred to as E. 107) apparently is tribrom-ethyl alcohol. A recent report by Hans Killian states that it is a useful sleep-producer and sedative but that full narcosis cannot be produced with it without injuring the human organism. He holds that to introduce into the organism a molecule with properties so decidedly injurious to the vital centers in a single dose without knowledge of individual rapidity of absorption is dangerous. For more than thirty years rectal narcosis has been tried again and again, and has always been given up because, in opposition to inhalation narcosis it is not possible either to decide on the precise dose or to interrupt the narcosis when one is produced. (Jour. A. M. A., September 8, 1928, p. 745.)

## MEDICAL STUDENTS THEN AND NOW\*

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WE are reminded daily in many ways that we are living in an age of great and rapid changes in most departments of human activity, including that of medicine, and of the changes which have come over nearly all things medical during the last quarter of a century, none is at first glance more arresting than that shown by a comparison of the type of man engaged now in the study of the healing art, with the type so engaged twenty-five years ago. I am struck, as I am sure all of the older men here must be, with the apparent youthfulness of the medical students of today, and their lack of that look of maturity and gravity which was so much a part of the student of the long gone past; a look which told not only of time passed, but of burdens borne, and responsibilities carried, which do not as a rule leave their mark upon us before the arrival of providing a living for themselves and their heir. These students of the present day are such a fresh, youthful, carefree looking lot, that one instinctively guesses that with them the problem of providing a living for themselves and their families has never been the burning issue that it was with many of us during our college days. The stamp of the classroom and the campus is upon these young men. Practically their entire lives have been spent in school. I note that their talk is of sorority dances, tennis, football, cars and "Camels." The cost of medical books, or of house rent; the expense of feeding and clothing a wife and children are subjects foreign to them—and it is well.

I am told that each student present here tonight had already been granted a degree of some kind before he matriculated in medicine. One is said to be a Bachelor of Arts, another is a Master of Science, and a third a Doctor of Philosophy. But, "it was not like that in the olden days, the days beyond recall." Medical students at the beginning of the century were, for the most part, men, not boys. In the lives of the majority of them a considerable period had

elapsed after they had, for divers reasons, laid down the burden of "book larnin'" in the "destrict skule" before they had again taken it up within the classic halls of the small proprietary medical college of the period. Many, as intimated above, were men with families of children, children indeed nearly or quite as old as some of the freshmen of today. Nearly all had previously engaged in other pursuits and had suffered from various degrees of undernourishment in their efforts to gain a livelihood in the trades; but competition there had proven too keen for men of their capabilities and practice of one of the learned professions became their last resource and only hope. I recall that in my class of about twenty members many trades and occupations were represented. Most of us continued to work at one or another of them more or less irregularly during our college courses.

Our premedic studies, if they may be spoken of as such, had been pursued outside of college and it is true that we knew but "small Latin and less Greek." However, by way of compensating for this deficiency, a good working knowledge of profanity, acquired behind the breaking plow in early Spring or upon the milking stool in fly-time, was possessed by most and practice in its use was, in the main, faithfully kept up. We had our degrees too in those days, make no mistake about that—not of course degrees conferred by college presidents in caps and gowns, but degrees shaped at the forges of ordinary, everyday human occupations with the hard hammers of necessity.

One of the members of my own class, for example, might with propriety have styled himself an M.F.P. (Master Flour Packer) had he so desired. He was a valued member of the staff of the "Pillsbury A"—cademy up the river, than which no institution in the world is more widely or more favorably known. It is not without real satisfaction that I recall that my own father, in an earlier time, was for several years connected with the same institution, and that the product

\*Banquet address given before members of the Phi Rho Sigma fraternity. Submitted for publication Aug. 8, 1928.

of his learning and his labor went out to nourish thousands in every land beneath the sun.

Another member was what I imagine would to-day be called a "Doctor of Music." He was an excellent performer, too, in his particular branch of that enchanting art, "Chin Music." He had received his degree from the Singer Sewing Machine Company, and was one of the most popular artists on their South Minneapolis Circuit.

Three of the men in the class were justly proud of their "E.B.K.'s" which in those days signified that they were expert bookkeepers, and let it be known they were real *bookkeepers*. Their textbooks at the end of the four-year medical course were found to be in such a remarkable state of preservation that they looked, to the casual observer at any rate, as if they had never been opened, and one tactless and, by nature, mistrustful professor had the temerity to insinuate that the reason for the splendid physical condition of those books was no conundrum to him. I am convinced however that his suspicions were in a measure unfounded and that some, at least, of the books, in spite of appearances to the contrary, had probably been opened.

We had one fellow with us, well on toward fifty years of age, who was the proud possessor of two degrees. He had a son also, who, by the way, likewise held a degree of some kind. The name of this enterprising student was Post. Do not take this to mean that he was in any sense of the word a "poor stick." He was not that kind of post. He was, in point of fact (with the exception of the speaker of course), the brightest man in the class and might be fittingly likened to that variety of post which is usually associated in our minds with the notion of hurry and speed. He was one of the most restless men in the world and was incapable of staying put for two minutes together. As I have said, he possessed two degrees, those of D.O. and D.P.T. (Doctor of Osteopathy and Doctor of Piano Tuning). He practised both professions with great assiduity and with a considerable amount of financial success during odd moments. I have forgotten just how he had his office hours arranged, but if I am not mistaken he thumped pianos before breakfast and patients after supper.

We also had a man with us who had been admitted to the bar. He practised, however, not *before* the bar but *behind* it, and each evening for about two hours (by way of making a living)

he dispensed, not justice but something said to be "justice" good. The old Hamline men present must surely remember the place on the corner of Second Avenue South and Fourth Street where our medico-legal colleague was in the habit of handing down with dignity and dispatch something more refreshing than the dry and musty legal opinions which constitute the stock in trade of most of those who boast of their admission to the bar. You recall how you could step up to that glistening, breast high, beer bespattered bar, place your newly half-soled number ten on the shining brass foot-rail and with the air of a man who had recently made a fortune in wheat, plank down the nickel that you had just borrowed from a momentarily flush classmate, order up a great schooner of foaming "Golden Grain Belt" or "Pabst Blue Ribbon" and then with chin up saunter boldly down to the steam table at the rear end of the room where, without money and without price, you were permitted to grab off "ein grosser stück von Wiener-schnitzel" with a side dish of sauerkraut to appease your appetite, and a handful of salty pretzels to stimulate your thirst—"Ah! the olden, golden (Grain Belt) glory of the days gone by!" For the benefit of the younger men present I will say that this constituted what is known as the "Free Lunch" of hallowed memory, which, regardless of its abuses and shortcomings, did serve to provide an impecunious medical student with a much needed meal now and then. But our legal member had hard financial sledding and he gradually discontinued his attendance at lectures about the middle of his sophomore year. I met him on the street one afternoon in the Spring and he told me sadly that he was forced to quit; the load, he said, was too heavy for him to carry, and judging from the way he staggered off under it, the load he had on was indeed a heavy one. I don't know what eventually became of this fellow, but it has always been a matter of some comfort to me to feel that one of the old bunch has probably escaped the many trials that harass the lives of most doctors.

Besides the man Post, already mentioned, there were four men among us who had been granted the D.O. degree. They had all practiced Osteopathy for a year or more and then given it up in disgust with the determination to return to school and get the real thing. Three of them were the finest kind of fellows too, but the fourth, w-e-l-l,

he was one of those birds (you see one once in a while yet) who affects a pointed Vandyke beard. You will be able to judge for yourself from that fact what sort of a "nut" he was.\*

A long haired Irishman in the class had, by dint of arduous labor, scraped and brushed aside all obstacles and had finally succeeded in mounting the ladder of fame leading up to a B.H.P. (Bachelor of House-Painting). But he got married at the end of his freshman year and forfeited his Bachelor's degree. He tells me, however, that he has never regretted the loss. I recall that his classroom work was not especially notable either for its volume or its excellence, but it was characterized by an almost uncanny ability in covering up defects and deficiencies with a deft stroke here and there, and a marvelous facility in accentuating by proper shading that which he particularly wished to bring to the instructor's notice. This craft—in anything like the perfection in which it was used by him—comes only with long and faithful practice. It enabled him to bag many a much needed credit that less expert employment of coloring would have lost to him.

Personally, I had tried everything once and many of the simpler things twice before I decided to abandon hope and become a physician. Just previous to the time of my matriculation at Hamline Medical College I had completed a six months course of lumber piling at the Bardwell-Robinson Mill in North Minneapolis, and I trust that it will not be considered boastful on my part to state that I reached on numerous occasions what seemed to me (and what was conceded by my colleagues) to be a high standing—sixty feet or more—in my profession. The strain at such times upon my none too stable nervous system was extreme, as I was forced to hang on by my very toe-nails, especially when my high standing exposed me to an equally high wind. I was finally graduated with the exalted G.B. (grand bounce) degree, the natural consequence of having dropped a piece of 2 x 4—accidentally, I imagine—upon the head of my Irish foreman. The commencement exercises, I recall, were short but strenuous and to me, at least momentarily, elevating. Old Tom certainly carried an awful wallop in that right shoe of his! Talk about your uplift workers, he was in a class by himself! Even to this day recollection of that

little episode is always attended with an irresistible impulse to grab frantically at my coat tails, and to increase the mild forward curve of my lumbar spine to a semi-circle. The shock—mental, moral and physical—was terrible to me and incomprehensible too, I believe, to those who have never suffered at the hand (or more accurately the foot), of so consummate a master of the uplifter's art. But I harbor no ill will against the vigorous old Hibernian because I feel, sometimes, that he did me a service, for, like certain of the members of the House of Commons who have been kicked upstairs by their colleagues into the House of Lords, I consider that I was kicked upstairs by him, out of a trade into a profession. I do, however, have moments (perhaps I should be ashamed to confess it) when I wish that some one would take the trouble to kick me downstairs again.

I have endeavored to bring out in a few words some of the conditions and environmental influences which might perhaps have been expected to make of the medical graduate of twenty-five years ago a very different product from that which our medical schools are turning out today.

But on closer examination is any difference which may seem to exist here, after all, not more apparent than real? I think so. Human nature is pretty much the same today as it has always been. It cannot have changed much in the short period of twenty-five years. It still reacts to stimulation in the same old way, and stimulation I find, after careful scrutiny of all available data, consists today (just as it did in my good old lumber piling days), of a rapid, never ending succession of swift kicks in the pants from one source or another. Now, much of the stimulation needful in the making of a physician is just about as well acquired, I believe, outside the college as in it, and a good deal of what the young man of today is stimulated to obtain in school, we of a former generation were stimulated to get elsewhere; in a somewhat different form it is true, but with about the same net results, as time will demonstrate. For, as is well known and frequently declared, there is no new thing under the sun. The law of compensation is still operative. For everything that is gained something is lost, and for everything that is learned something is forgotten. Some one has said that society is like a wave; the wave itself

\*The speaker himself wears a Vandyke beard.

moves onward but the water in it does not. There is a change of form but no forward movement of substance. No greater men are living today than those who built the Pyramids or calculated solar eclipses upon the walls of ancient Nineveh. By a wise provision of nature each succeeding generation gets, somehow, the same old allotment of information, but gets it in a form that is suitable to it and convenient, more or less, of utilization by it. You of this oncoming generation get your learning in one shape, we of the passing generation got ours in another, but examined closely it is seen to be the same old consignment of vanity and vexation of spirit that perplexed and disappointed the souls of the Wise Men of the East five thousand years ago. It is still true that "Knowledge comes but Wisdom lingers" and

Solomon was undoubtedly right when he said that "Wisdom is the principal thing." It comes, not so much from the reading of the "many books" of which "there is no end," as from experience and reflection. Real progress is distressingly slow. Changes are seldom what they seem. Despite our frantic reaching out for the new and the revolutionary it is undeniable that we are pretty much where we have always been, in truth—

"We are the same that our fathers have been;  
We see the same sights that our fathers have  
seen,  
We drink the same stream and view the same  
sun,  
And run the same course that our fathers have  
run."

#### CAFFEINE-REDUCED COFFEES

When the facts brought out by the A. M. A. Chemical Laboratory examination of caffeine-reduced coffees were brought to the attention of the manufacturers, the concerns involved immediately began checking up on their products. The Kaffee Hag and Sanka products changed hands about the time of the examination. From evidence that has been submitted since the A. M. A. analyses were made, it seems to be a fact that both Kaffee Hag and Sanka now contain caffeine in such minimal amounts as to be practically negligible. The third preparation, Blanke's Refined Health Coffee, still contains a relatively large amount of caffeine. Kaffee Hag and Sanka are now submitted by their manufacturers to daily checks of caffeine content, a procedure which did not prevail prior to the analyses by the A. M. A. Chemical Laboratory. (Jour. A. M. A., September 22, 1928, p. 886.)

#### TUBERCULIN

Investigation at the Otho S. A. Sprague Memorial Institute at the University of Chicago makes it evident that the water-soluble protein in tuberculin is similar in many of its properties to ovalbumin. These studies have resulted in the isolation of the active principle of tuberculin in crystalline form. (Jour. A. M. A., September 1, 1928, p. 648.)

#### THE INVESTIGATION OF GERMICIDES

J. S. Simmons has studied the bactericidal action of mercurochrome-220 soluble and iodine solutions in skin disinfection and F. E. Rodriguez has studied the action of mercurochrome and iodine as disinfectants of the mucous membrane of the mouth. After taking swabs of the treated areas, they streaked the material directly, without previous dilution, on the surface of an agar plate. This procedure, it is agreed, will give inhibitory effects and may be an unfair test, because no two drugs have exactly the same inhibitory index. It has been found that iodine has a higher inhibitory effect than mercurochrome and it seems likely that the amount of iodine carried over to the plates might have been sufficient to inhibit growth of the bacteria without being bactericidal. G. F. Reddish and W. E. Drake studied the action of mercurochrome-220 soluble and U. S. P. tincture of iodine as to comparative germicidal efficiency. These investigators used scrapings from the skin surface in a way to considerably dilute any antiseptic that may be present. They made controls to prove that no drug inhibition took place in their tests. In other respects the work of Simmons and Rodriguez introduced errors which Reddish and Drake tried to avoid. However, whatever the final results of laboratory experiments may be, reliance should not be placed solely on such results; clinical observations must be considered. (Jour. A. M. A., September 8, 1928, p. 728.)

## TUMOR OF THE FRONTAL LOBE PRESENTING A PARKINSONIAN SYNDROME\*

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IN the literature of the last few years, numerous references have been made to the differential diagnosis of encephalitis and brain tumor. Among others, Hamilton (1922) called attention to the great diversity of symptoms in encephalitis, pointing out that Argyll-Robertson pupils, choked disks, catatonia and even syndromes of brain tumor might occur as a result of encephalitis. He found, in one issue of a French journal, that seven cases of choked disk with operation for brain tumor had been reported, in which the diagnosis probably was encephalitis. Parker (1923) reported from The Mayo Clinic three cases of brain tumor simulating epidemic encephalitis. One was a tumor of the third ventricle, one a tumor of the fourth ventricle and the third a tumor involving both thalami. In the latter case, that of a boy aged twelve years, the clinical picture was that of a parkinsonian syndrome, and the correct diagnosis was made at necropsy.

It is apparent, however, that the problem of differentiation of brain tumor and encephalitis is not confined to the acute forms of encephalitis, but presents itself in practically every type of sequelæ of encephalitis. Especially common is the occurrence of catatonic symptoms in sequelæ of encephalitis;<sup>1,4</sup> often a diagnosis of dementia præcox is made because of the catatonic picture. Psychosis with catatonic features is also common in cases of brain tumor; such cases have been reported by Schroeder, Souques and Bertrand, Rosenfeld, Moersch, and others. The study and differentiation of these catatonic-like syndromes is one of the most perplexing problems one has to encounter when attempting to evaluate in a given case the possibility of psychic, inflammatory or neoplastic cause. Closely allied to this diagnostic problem are the difficulties encountered in lesions of the frontal lobe which may present a great variety of symptoms, including a catatonic or parkinsonian-like picture, depending on the structures involved. It is well recognized that the syndromes of lesions of the frontal lobe

may be predominantly psychic or neurologic or they may be mixed, and, as Nonne stated, only too frequently they run an unusual course, and fail to present the prescribed symptoms.

In the more recently reported cases of brain tumor with symptoms simulating a parkinsonian syndrome, the objection has been raised that probably the patients also had encephalitis; thus exception has been taken to the case recently reported by Hunt and Lisa, in which the patient presented a rather characteristic parkinsonian picture, and at necropsy a large fibrosarcoma of the right frontal lobe, involving all three convolutions, was found. Unfortunately a complete histologic study of the brain was omitted, so the authors could not deny the possibility of coexisting encephalitis. I am reporting the following case because the patient presented a definite parkinsonian syndrome which was so diagnosed. Later a diagnosis of brain tumor was made, the tumor was removed, and complete recovery ensued.

### REPORT OF CASE

A man aged twenty-eight came to The Mayo Clinic July 17, 1924, complaining of lack of energy, fatigue, and a feeling of sleepiness. In 1918, the patient had had a severe attack of influenza. He was in bed for two weeks, recovered, and was well until 1922. Then, for six months, he had weekly bilateral headaches, which lasted from two to three hours. Associated with the headaches was dizziness, and on several occasions momentary loss of consciousness. These symptoms then subsided, and for a period of about six months he appeared to be well. In 1923, it was noted by relatives that he was undergoing an insidious change. He gradually lost his enthusiasm, tired easily, and seemed to be slowing up mentally, with evidence of absent-mindedness. It was then noted that his movements and speech were also becoming slow. He would forget commands unless he carried them out promptly. Early in the autumn of 1923, he had a severe nosebleed which required packing. A few days later diplopia developed, and it was noted that the eyes were crossed. With the visual disturbance, there was a return of headaches, which were both temporal and frontal. He became very drowsy, would fall asleep sitting in a chair, and was difficult to arouse. He lost all interest and both movements and speech became slower. It was

\*From the Section on Neurology, The Mayo Clinic, Rochester, Minnesota. Read by title before the Society of Neurosurgeons, Rochester, Minnesota, June 18, 1928.

noted that his posture and gait were stiff and slow. During the two months prior to his coming to the clinic, he appeared a little brighter, his headache practically disappeared, and his family believed that he was improving.

General examination showed a well developed young man with a parkinsonian facies and gait, and slow speech. Examination of the blood and spinal fluid was negative except for an increase of the spinal fluid pressure. A roentgenogram of the head showed erosion

of the left leg, and there appeared to be some impairment in the right leg. There was a fine tremor in the left arm and hand.

In the presence of choked disk, increase of spinal fluid pressure, and the roentgenogram of the skull, it appeared that a right-sided tumor was present, probably in the region of the basal ganglion. The marked parkinsonian attitude was so striking that the patient was observed for several weeks before operation was advised, in view of the frequent occurrence of choked



Fig. 1. Endothelioma removed at operation.

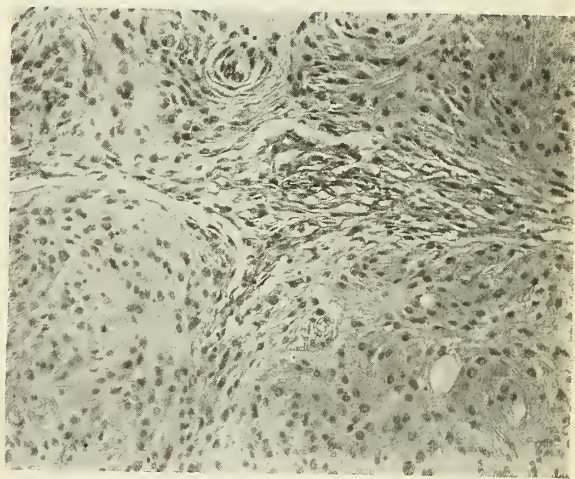


Fig. 2. Section of endothelioma shown in Figure 1.

disks in encephalitis. During this time, the patient had two attacks of numbness, extending over the left hand and leg.

August 4, 1924, an osteoplastic flap was turned down over the right frontomotor area. A neoplasm was encountered in the anterior upper corner of the field of exploration; its origin was in the dura about 2 cm. from the longitudinal sinus, and the tumor was adherent to the wall of the sinus. The mass was about 7 cm. in diameter, more or less rounded, with large blood vessels leading to it. It extended into the first and second frontal convolutions, pressing back on the motor area and also extending to the median surface of the frontal lobe. It was shelled out completely and the patient recovered uneventfully (Fig. 1). Histologic study of the tumor showed it to be an endothelioma (Fig. 2).

Examination September 5, 1924, showed marked improvement. There was some slowness and incoordination in movements of the left arm. The gait remained slightly impaired. Speech had improved and the patient himself appreciated a marked change in his mentality. The reflexes on the two sides were now equal and there was absence of Babinski's reflex. The fundi showed residual edema of the disks.

The patient was again seen April 28, 1925, at which time the entire examination was practically negative. The fundi showed slight thickening along the lower margin of the disk; the fields were normal. The left side had entirely recovered and he had been able to carry on heavy manual labor for the preceding three months. A letter from him, November 21, 1927, stated

of the posterior clinoid processes. The neurologic examination showed a choked disk of 3 diopters of each eye, with a few hemorrhagic areas. The fields showed slight concentric contraction, with enlarged blind spots. Pupillary reflexes and ocular movements were unimpaired. There was slight asymmetry of the face with evident weakness on the left side. The reflexes throughout were slightly increased, more on the left side. Abdominal reflexes were slightly diminished and there was a suggestive plantar extension of the left foot. The motor power was slightly impaired in the left side of the face, the left arm and the left leg. The tonus throughout the left side was definitely increased, and there was a suggestion of increased tonus in the right side. The speed of muscular movements was impaired in the left arm and hand. Sensation was intact throughout. The general appearance of the patient presented a characteristic parkinsonian attitude with a preponderance of evidence on the left side. The face had a mask-like appearance, and the speech was slow. The left arm was carried rather rigidly and was slightly flexed. In walking the patient tended to drag

that he had been steadily employed since resuming his occupation as a miller. Occasionally, with very hard work, he suffered from transient headaches. Figures 3 and 4 show the patient three weeks and four years, respectively, after operation.



Fig. 3. Patient three weeks after operation.



Fig. 4. Patient four years after operation.

*Comment.*—Although it cannot be proved that this patient did not have encephalitis, it is reasonable to assume that the brain tumor was the sole etiologic factor in the symptoms presented, especially since complete recovery followed removal of the tumor and has continued for a period of almost four years.

That lesions of the frontal lobe may present a psychic syndrome, a neurologic syndrome, or a combination of the two, is well recognized. In the case reported, the mental picture was fairly typical of a lesion of the frontal lobe and the neurologic signs corresponded to pressure ex-

erted on the parietal lobe and corpus callosum. The cases reported by Morrison, and Hunt and Lisa correspond closely to this one.

The parkinsonian or catatonic-like picture may also be presented by tumors of the basal ganglia or the third ventricle,<sup>1,2</sup> and in such cases one is usually placed in a difficult situation in trying to establish the exact site of the tumor.

In my experience it has proved advisable in cases presenting unusual organic dementia, catatonic syndromes, or other bizarre mental pictures, to consider carefully the possibility of lesions of the frontal lobe, especially tumors.

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## TUBERCULOSIS CLINICS\*

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JOHN WESLEY was very much interested in health, and after a severe attack of disease he not only took good care of his health but urged others to follow his example. Winchester says, "He was always concerned for the health of the people in his societies and sometimes spoke almost with envy of the services rendered to humanity by a good physician." In 1746, he published a book of simple prescriptions for common diseases and accidents, with the advice of a druggist and a surgeon, and arranged for the free distribution of medicine for the poor members of his societies in Bristol.

During the first six months of his experiment, one hundred people took advantage of it each month. The experiment seemed so successful to him that the next year he opened a dispensary for the poor of Bristol which continued to operate for the next fifty years.

Kings and queens had long attempted to cure disease and, perhaps, some believed themselves to be successful. There are many other illustrations that might be cited to show that for a long time there had been other groups than the nursing and medical professions interested in the diagnosis and treatment of disease; in fact it had long been known and many times expressed that good health is the best asset that any individual, family, community or nation can possess. Is it not therefore reasonable to expect that persons other than nurses and physicians would be interested, not only in personal but in community and national health?

In recent years a great wave of enthusiasm has spread over this and other countries for better health and, frequently, lay groups have been influential in organization for good health. There have been several methods of attack. One, perhaps the most outstanding, has been attempts to educate the public through the press. Such great organizations as the "American Child Health Association," "The American Public Health Association," "The National Tuberculosis Association," and some of the leading insurance com-

panies of this country, particularly the Metropolitan, have done much of an educational nature through the distribution of health literature.

Another method has been through free examinations, not only of the sick, but also of the healthy. And here we find some of the great insurance companies of this country have taken a leading part.

But in free clinic work, attempts have been made to profit by the mistakes of the past and I believe that the free clinic today is doing more good for the public than it has ever done in the past and I believe that it is capable of doing still more good than it is at present. It is not perfect by any means.

If free clinics are to do their greatest good they must be developed and conducted with the coöperation of the visiting clinician, the local physicians, the various lay organizations and the public in general. With such coöperation, no harm will come to anyone but much good will be done to all concerned. In some localities it is difficult to get the coöperation of the local physicians because of injustices that have been done them in the past.

Physicians were often sent out who were very egotistical, and upon reaching small towns they placed themselves on high pedestals, taking the attitude that the local physicians were not well informed and that they had come there to teach not only patients, but physicians, and, all too frequently, they told the patients that their local physicians were not capable of diagnosing and treating their diseases. I would like to cite the case of a young man who went into a small city and stated to a considerable number of patients that no one nearer than a large city or a special institution was capable of making good x-ray pictures and that no one there was capable of treating the disease once it was detected. It is obvious that this man was not in sympathy with the local practitioners of medicine for, consciously or unconsciously, he was destroying the confidence of the people of that community in their practitioners.

One physician in a small town told me that he

\*Presented before the Minnesota Sanatorium Association meeting at Mineral Springs Sanatorium, Cannon Falls, Minnesota, August 9, 1928.

was opposed to free clinics because four or five years before a children's clinic was held in his town and the mothers were told by the visiting clinician that for feeding schedules and treatment of any kind they should bring their babies to the city to see him. Another physician complained that when a clinic was held in his town, the visiting clinician diagnosed tuberculosis in 25 per cent of the people examined. Many apparently well people who had gone to the clinic were told that they had advanced tuberculosis and must go to a sanatorium. A good number of these people sought the advice of their family physicians and others, who, after careful examination, could find no evidence of disease. One man actually sold his farm and gave two children to relatives to keep while he and his wife went to a sanatorium to be cured of their tuberculosis. Six months observation at the sanatorium proved that neither of them had tuberculosis.

We cannot blame physicians in such localities for expressing some feeling of resentment when free clinics are discussed. Fortunately many in charge of clinics have profited from the mistakes of the past, so that only clinicians who will co-operate are assigned to the work.

Here I would like to cite the case of a physician who, during the course of the day, referred several patients back to their family physicians with the advice that they should keep under close observation. He is an example of a clinician who attempts to inspire confidence in the local practitioner of medicine. It would have been easy for him to have sent the patients to some distant physician for examination and advice. But what would they have done when they returned home? They could not have been satisfactorily treated at long distances. It was far better for them and their community to continue with their local physician.

The clinician who goes into a community to examine patients in a free clinic must keep in mind his limitations; he must also keep in mind that as a stranger and one who has been advertised to the public as a specialist, he has the confidence of the people. Therefore he is in a position to do much harm or much good, depending entirely upon his attitude toward the patient, the physician and the community.

I have mentioned the limitations of the physician; these we must not overlook. Time was

when a physician with a silk hat, a gold headed cane and a wise look could make the public, who associated much mystery with medicine, believe almost anything he said. He might be right or he might be wrong, but there was no one to check up on his findings and statements. That day has long since passed. How absurd for anyone to think that he can go into a community and see twenty, thirty or perhaps a hundred patients in a single day and make a definite diagnosis in many of those cases. All he has is a brief history, very brief, the general appearance of the patient and the physical examination. He does not have at his disposal, unless he is co-operating with the local physician, advantages of laboratory examinations nor does he have *x*-ray films to aid him in inspection. Yet, it is generally conceded that of the five diagnostic points in pulmonary tuberculosis, laboratory examinations for tubercle bacilli and the *x*-ray examinations are very important. When it comes to the examination of children where lymph node tuberculosis is the prevailing type, we are even more handicapped for here physical signs are of little avail. Symptoms may help us some but the two outstanding diagnostic points are positive cutaneous tuberculin tests and stereoscopic films, made especially to show the region of the lung hilum. If the lymph nodes are located near the surface of the body such as the cervical region, then we cannot say definitely that they are tuberculous without further examination than the physical. Yet, on a number of occasions, I have seen written across charts the diagnosis of hilum tuberculosis when the physician did not have one single point of value in arriving at such diagnosis. All he had was a history of exposure and a child somewhat below par. The clinician cannot afford to do this kind of work; the responsibility is too great. He will guess rightly sometimes but he will be wrong a sufficient number of times to ruin his reputation as a diagnostician, and in these modern days we must have the evidence before making a diagnosis of tuberculosis. It is easy to write a diagnosis of tuberculosis across a chart, but it is difficult for the individual to throw off the stigmata that follow that diagnosis. Relatives and friends of that person become alarmed lest they may contract the disease through contact; life insurance companies consider such patients extremely bad risks and, once a diagnosis has been given the patient and it has

been recorded over a physician's signature, we may argue all we like about the attitude of relatives and friends, insurance companies, etc., being right or wrong, but the stigmata remain. Even the finding of râles over the upper part of the chest does not always mean tuberculosis. True, it is often tuberculosis, but without other evidence the clinician is not justified in making a diagnosis.

I recall the case of a nurse who reported for an examination because of a cough, expectoration, rather recent loss of weight, temperature elevation, rapid pulse and other symptoms that were very suggestive of tuberculosis. Moreover, she gave a history of having had seven years ago a period when she was considerably below par over several months and tuberculosis was strongly suspected at the time. The physical examination revealed moderately coarse râles above the second rib and third spine on the right side. She was made a strict bed patient and one day, with a very serious, perhaps too serious an expression, we went to tell her that we felt she had tuberculosis and that all in her favor was that the Larson ring test was negative and we could find no tubercle bacilli in her sputum. The Larson ring test was new; we were sure of its value; tubercle bacilli are often absent from the sputum in early cases of tuberculosis. Therefore, we could not place much emphasis on either of these phases of the examination but, with the other diagnostic points positive, we felt justified in rendering a diagnosis of tuberculosis. However, we wanted to keep her under observation for a time to see how she would respond to treatment. Observation showed that she had a temperature elevation every afternoon, her pulse was accelerated but after two or three weeks all physical signs had disappeared from her chest, her temperature and pulse became normal, she was feeling quite well and at the end of a month even the parenchymatous *x*-ray shadow had disappeared. What she had I have never known. Whether it was an ordinary pneumonia in the apex or whether it was a tuberculous process with a good deal of collateral inflammation that healed by resolution quickly or some other condition is a matter of speculation.

Fortunately, in this girl's case there was an opportunity for observation but had I seen her in a free clinic and made a diagnosis on the history and the presence of râles in the upper lobe and

reported her case as tuberculosis, I would not only have stigmatized the patient and injured my reputation but would have lessened the confidence of the public in that community in the medical profession. On the other hand, with our limited facilities, there are so many dangers of overlooking small areas of disease that are of a clinical nature. We know now that if a lesion is located approximately four centimeters from the surface of the lung, physical signs are of little avail. There is so much normal lung tissue interposed between the areas of disease and the surface of the body that the abnormal sounds from the diseased area are not always transmitted to the surface.

I have seen a young man who had an unusually careful examination a few weeks before. At that time there were no abnormal physical signs over the chest. A little later this young man was working in a hospital where *x*-ray films of the students' chests were made routinely. The films in his case showed very definite evidence of a tuberculous process involving the left upper lobe. Even with the prejudice of knowing what the film showed and seeing the shadow on the fluoroscopic examination, it was impossible for any of the physicians who later examined him to obtain any abnormal physical signs. This area of disease would have been entirely overlooked in the ordinary free clinic for tuberculosis.

Such cases should make the clinician extremely cautious about making statements to any patient who has not had a very complete examination. In going into a strange community to hold a clinic, the clinician should feel as one clinician recently expressed himself when he said that he always enters with a great deal of humility.

The person who poses as a specialist must not overlook the fact that in a good many communities the patients who come to him have been under the care of local physicians. In some cases, these physicians have *x*-ray films available, they have reports of laboratory examinations available, they have very careful observations that have been made over weeks, months and sometimes years and, most certainly, such physicians know more about the patient than the visiting clinician can hope to learn in a short time. A revelation to a good many young physicians is the finding of such excellent practitioners of medicine in many small cities and towns.

After holding clinics in a good many places and

looking back upon the work, I am really surprised what a small number of patients with tuberculosis have reported for examination who had not already had diagnoses by their family physicians and often had been under excellent care. Yet, in some places after a clinic has been held, the local papers carry articles which leave the public with the impression that all the cases that were given diagnoses of tuberculosis during the clinic had not been detected before. Such statements can do nothing but cause a loss of confidence of the people of a community in their family physicians when in reality the physicians had done all and more than the visiting physician could possibly do.

Because of numerous mistakes of the past by visiting clinicians, many local physicians have become antagonized. They resent terribly the free clinics that bring in outside physicians and, instead of coöperating with them, will do all they can to make their work difficult. Some will refuse to send in their cases with tuberculosis, others will send in cases instructed to give no history of the disease, thus laying a trap for the clinician. The result is that the clinicians' work has been of little avail, the local physicians have not been helped with their difficult cases and the community confidence in the local physician has not been increased. We must not criticize too severely this antagonistic spirit which has developed from bad coöperation. The same local physicians become very coöperative when they know of the change of policy and that the visiting clinician is there to help with their problems, that he is not there to compete with them nor to send away their patients to other places, but that he is interested in the control of tuberculosis. When such an attitude on the part of the visiting clinician is taken, much good can be done. Practically every local physician has problems, some of which are extremely difficult, and very frequently an outside physician can be of great help and it is a fact today as it was a long time ago that "a prophet is not without honor but in his own country."

Not infrequently one sees a tuberculous patient whose family physician has given the very best advice known, and who, after refusing that advice, can in a short time be convinced, by a visiting physician, that it is right.

Recently while holding a clinic in a small town in Minnesota, one of the physicians came in and

gave me the name of a patient who was to appear for examination. He then said that this woman was a grandmother well in the sixties. She had had cough and expectoration over a considerable period of time. A year before, the sputum was found to be negative to tubercle bacilli, yet her physician firmly believed that she had tuberculosis and did not hesitate to tell the family so. About six weeks before my clinic, a specimen of sputum had revealed the presence of tubercle bacilli. When the grandmother was informed that bacilli had been found she was quite resentful. She stated that there had been no tuberculosis in her family and she was sure that this disease could not be causing her trouble. She was living with a married son who had three children, and the physician mentioned to her the dangers of exposure of these children. Of course she would do nothing in the world to harm them but still she did not believe that tuberculosis existed. She was advised to go to an institution but refused. When she came for an examination the morning of the clinic, I said nothing about having any information concerning her case, asked her a few questions but could see that she was trying to mislead me in her answers. After listening to her chest, and having heard moderately coarse râles persisting after cough over the right upper lobe, I frankly told her that she had pulmonary tuberculosis and then talked over with her in as tactful a manner as I knew the possibilities of her recovery, hoping that she would inquire about the dangers to her grandchildren. This was the first inquiry she made and, before leaving the room, she agreed to return to her family physician that same day and make application to an institution for the tuberculous. That night her physician told me that the application had already been mailed.

This case is cited to show how the visiting physician, if he will take the right attitude toward the family physician and the patient, can be of real service to both of them and their community.

There has been a great deal of discussion regarding the number of patients that a clinician should examine in a single day. In some places a policy has been adopted of examining no more than twenty, while in others thirty are seen in a day. But in many places all of the patients who apply for examination are seen by the clinician that day, that is, the clinic is advertised and

no one is turned away. If the clinician is in a position to make complete examinations and arrive at diagnoses, then twenty is a great sufficiency. Unfortunately, most clinicians are not so equipped; they do not have *x*-ray examinations, which have become extremely important in recent years, and they do not have laboratory examinations. Steps are being taken to provide these phases. For example, in California, Doctor C. C. Browning, President of the State Tuberculosis Association, through that organization, had mounted on a truck a complete *x*-ray equipment. His idea is excellent and it is hoped that his equipment will be perfected and adopted everywhere where other arrangements cannot be made for such important phases of the examination.

On a few occasions I have held clinics in physicians' offices. This has always occurred where there was only one physician or a group of physicians practising in the community. In such instances the physicians have made available their *x*-ray equipment and technician so films could be made, developed and interpreted during the day. This, of course, is a tremendous advantage to the clinician as well as the local physician and the patient. When the clinician is provided with *x*-ray and laboratory findings, most certainly twenty patients a day is enough.

I have held clinics in one county where a most excellent survey had been made under the direction of Doctor Robers of Little Falls, Minnesota. He had put forth great effort through the County Tuberculosis Society, of which he was president, to bring to the clinic only those cases who were especially in need of an examination, those in whose families cases of tuberculosis had existed some time in the past and had been reported to the State Board of Health, others in whom there was no history of contact but who were considerably below par. This made an excellent group and I felt that every patient sent should have been examined. It is a far better method than that of simply advertising a clinic and letting all register who desire an examination.

In another place I have held clinics where a splendid Public Health Nurse was at work. She had become quite familiar with the health conditions of her county and had made appointments with the people who she felt should be examined. We knew exactly who was to appear at 9:00 o'clock and at each period throughout the

day. Very much to my surprise, this worked out well, for most of the people kept their appointments and the places of a few who were unable to do so were taken by others who had heard of the clinics and came in without appointments.

I do not mean to condemn too severely the large clinic where nothing has been done but to advertise a free clinic and where a hundred or more people appear for examination. Much good can be accomplished through such a clinic but the clinician most certainly cannot, with safety, arrive at definite diagnoses in most of his cases. He can, however, quickly make note of deviations from the normal and recommend strongly to the patient that he consult his family physician with reference to the abnormal conditions. He can say that the physical signs may be due to a number of different conditions but that time and facilities do not permit him to determine which condition is causing these signs but that the family physician is equipped to determine that quite definitely. Even in a tuberculosis clinic, the visiting physician should always look at the throat and for foci of infection in the upper respiratory tract, since they frequently cause the symptoms which lead the patient to believe that he has tuberculosis. In seeing such a large number of patients, it is not a good thing for the clinician to say to his patient that he should have his tonsils removed; it is far better to say that the tonsils look a little suspicious and the family physician should have an opportunity to determine whether they should be removed.

The fact that the clinic has been advertised in the newspapers and elsewhere creates an interest in health in the community, and if this were the only good that the clinic does it would well justify all of the expenditure of money and time necessary to arrange for and conduct such a clinic. But the fact that a good many people, perhaps fifty or a hundred in the community, take the time to go to the clinic is sufficient to lead many others to think of their health.

In making arrangements for free clinics, the local physicians often make the criticism that they are not consulted in advance, that some lay person of the community who has been interested in the sale of seals goes ahead and makes arrangements for the clinician and puts on the clinic without the support of the physicians. In some places the criticism has been made that the person who makes the arrangements may be very

enthusiastic about a certain physician in the community and arranges everything definitely to his advantage. This is manifestly unfair. If there is anyone in a community who is primarily interested in the health of the people, it is the physician and, most certainly, they should all have an opportunity to take part in arranging for a free clinic when one is to be had.

If they will not coöperate, it cannot be said that they have not been given an opportunity. One of the very unfortunate facts about the medical profession is that physicians, particularly in smaller places, often do not get along well together.

I recall the case of a Red Cross Nurse who went to the three physicians in the town where she was located to get their coöperation in the development of the children's clinic. Each of the three said he was very much in favor of the clinic and each promised to be present and take part, not only in bringing children there, but also in helping the visiting clinician with the examinations. She reported that the outlook was excellent for a splendid clinic. But on the day of the clinic the visiting clinician was disappointed to find not one local physician present. It was later learned that they were not on speaking terms with one another, and each was afraid that he would meet one of the others if he put in an appearance. At heart each one really was in favor of the clinic but their actions in the matter did not tend to inspire the confidence of the public in them.

In some places it has been possible to overcome such occurrences by assigning each physician a certain time during the day to bring his patients and while there to visit and aid in the clinic. In this way each physician has an opportunity to see the visiting clinician alone and to discuss various problems with him. Even if physicians are on speaking terms, it may be somewhat embarrassing for one to bring his patients at a time when others are present. Patients frequently change physicians and the embarrassment may be for the former physician as well as the present. It may also be embarrassing for the patient.

In one place where I have held clinics a number of times, a physician of middle age has always been there and none of the others will attend because of his presence. They state that he is simply there to find out which physicians the people are patronizing. Therefore, the plan of

making appointments for the physicians is a very good one for many places.

After all, it is the coöperation of the various agencies of the community that makes the clinic successful.

It has been suggested that it would be far better to have the local physicians hold the clinics or perhaps physicians from adjacent counties to exchange work, but from talking with patients as well as from having seen it attempted, I am convinced that such an arrangement would not work out satisfactorily in most places. In the first place, there develops ill feeling among the physicians because one or two are assigned to this work which includes examination of other physicians' patients. In the second place, there is likely to be a group in every community who do not have the same confidence in each of the physicians of the community so that a local physician would not be satisfactory from the standpoint of the public. In small places where there is only one local physician or one group of physicians, such an arrangement would work better, but even there it is far better to have a person from outside or one devoting his entire time to the disease or the group of diseases for which the clinic is scheduled, as a stranger is far more likely to be accepted by the entire community, including the doctors themselves.

The physician sometimes objects to the free clinic on the ground that it takes calls from his office. The truth is, quite a high percentage of the people who come to a free clinic through the notices they have seen in papers, are not under the care of any physician. The history reveals that they have not seen a physician for years and I am convinced that very frequently an interest in health is stimulated in this way, and I know quite often they are sent from a clinic to a physician's office whom they choose, for diagnosis and treatment, while the patient who is seeing his physician frequently is sent back to that physician as soon as possible.

Another objection that physicians often have raised to a free clinic is that the visiting clinician goes out because of a large fee that he receives for his services. The man in private practice could not think of leaving his office work a day for the amount paid in most places for a clinic. The most that we have paid in Minnesota is twenty-five dollars a day and expenses. The local physician could not afford to do the work

that cheaply unless they, like the visiting clinician, are willing to donate considerable time to the community and the cause.

The lay organizations have an important rôle to perform and should not be ignored. There is considerable danger of antagonism if clinics are not properly arranged. I recall one county where a district medical society, because of a grievance of seven years before, voted to indorse no free clinics in its entire district. This should not have been done without more careful consideration. In the first place, the person who had been in charge of the seal sale the previous winter had already made arrangements for a clinic in her county. She asked the State Public Health Association for a clinician and all arrangements were made. Then the Association received a notice of the action of the medical society. Upon informing the person who had arranged for the clinic of this action, she immediately replied that she was compelled to hold the clinic, that during the sale of seals she had promised the public that a part of the money would be expended on free clinics. It so happened in her county that a

rather powerful lay organization was supporting her. The action of the district medical society brought a great deal of discredit to the doctors. The lay people of that county could not see why the physicians should oppose that which they felt was good for the community. The danger to the medical society was in the fact that the lay organization was in a position to employ a physician who would come in for some time under their employ, not only diagnosing but also treating the patients of their community.

The free clinic is here. How long it will stay no one can predict with certainty. It has become quite popular with the people; they are demanding it. It has its dangers, but if they are anticipated and guarded against, it is capable of doing great good. As an educational medium, the free clinic has worthwhile possibilities. Whether he likes it or not, the only sane attitude for the physician to take just now is one of coöperation. If he does this he will be looked to for direction and thus he will be able to convert the clinic into what he believes it should be, or offer some substitute which will be satisfactory to him and the public.

#### CAFFEINE IN BEVERAGES

The report of the U. S. Department of Agriculture indicates that, despite continued growth in population, nearly six and one-half million pounds less tea was imported during the fiscal year ending June 30, 1928, than during the previous year. This represents a decrease of 7 per cent. In contrast with this is the governmental announcement that caffeine-containing drinks other than tea and coffee are now being used extensively with meals at lunch counters, cafeterias and similar eating places. Those who have hopefully anticipated a decrease in the "caffeiniziation" of the nation will be further disconcerted by the information that of several million pounds of tea waste, tea siftings and tea sweepings which have been imported "for manufacturing purposes" practically all are reported to be converted into caffeine, a large portion of which is used in the preparation of caffeinated soft drinks. (Jour. A. M. A., September 1, 1928, p. 649.)

#### DISTRIBUTION OF ARSENICALS IN THE BODY

Arsenical dermatoses have long been known to follow the use of certain familiar arsenical drugs. By employment of microchemical methods it was demonstrated that, after administration of such products as Fowler's solution (solution of potassium arsenite) or Donovan's solution (solution of arsenous and mercuric iodide), arsenic becomes localized in the epidermis, subpapillary layer and other ectodermal tissues. On the other hand, keratoses and pigmentation appear to be in extreme rarity following the administration of arsenphenamines. A new study has demonstrated a well defined difference in localization of the arsenic following introduction of certain trivalent and pentavalent arsenicals. This may explain the pathologic processes that they produce and their therapeutic action. Arsenic in trivalent compounds has a special affinity for the vascular structures, while the pentavalent arsenicals seem to be directed toward the ectodermal structures. (Jour. A. M. A., September 15, 1928, p. 805.)

# THE CAUSES OF DEATHS FROM SPINAL ANESTHESIA

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**M**ORTALITY statistics on spinal anesthesia are difficult to collect, due to the fact that many cases have not been reported and some articles dealing with spinal anesthesia do not give the specific number of deaths occurring with its use. Certain deaths which have been recorded under spinal anesthesia can in no way be attributed to the use of the anesthetic. Other deaths have been the result of toxic drugs and improper technic.

Up to ten years ago, the mortality from spinal anesthesia did not compare favorably with the mortality from general or inhalation anesthetics. Since that time, however, improved methods, less toxic drugs, more accurate dosage and knowledge of the physiology involved has resulted in a more favorable attitude toward this form of anesthesia. In fact, present indications are that spinal anesthesia will eventually supplant other anesthetics for all operations below the diaphragm.

From the recent literature, we have been able to list the following injections and deaths:

	Administrations	Deaths
Babcock <sup>1</sup> .....	20,000	12
Martin and Arbuthnot <sup>2</sup> .....	6,000	6
Ducuing <sup>3</sup> .....	6,000	3
Leriche and Lecene <sup>3</sup> .....	83,694	24
Boyd and Yount <sup>4</sup> .....	6,229	4
Morrison <sup>5</sup> .....	12,000	0
Hosemann <sup>6</sup> .....	3,000	0
Rostock <sup>6</sup> .....	5,000	0
Deaver <sup>7</sup> .....	6,000	2
Labat <sup>7</sup> .....	1,000 or more	0
Gosset and Monod <sup>8</sup> .....	2,000	0
Thompson <sup>9</sup> .....	1,000	1
Bainbridge <sup>10</sup> .....	1,065	0
Pitkin <sup>11</sup> .....	600	0
Campbell <sup>12</sup> .....	536	2
McMullin <sup>13</sup> .....	392	0
Richard <sup>14</sup> .....	360	0
Stanley <sup>15</sup> .....	280 injections	0
Weston <sup>16</sup> .....	170	0
Brooks <sup>17</sup> .....	100	0
Burrus <sup>18</sup> .....	100	0
Peabody <sup>19</sup> .....	200	0

Cosgrove <sup>20</sup> .....	54	0
Murphy <sup>21</sup> .....	50	0
Astley <sup>22</sup> .....	13	0
Duboff <sup>23</sup> .....	12	1
Kahle <sup>23</sup> .....	24	0
Duboff-Orth <sup>23</sup> .....	700	0
Bressot <sup>24</sup> .....	618	0
Strauss <sup>25</sup> .....	83,698	14
Garre and Bouchard <sup>25</sup> .....	10,000	6

Total administrations: 250,895.

Deaths: 75.

Mortality Rate: 1:3,345.

(There is the possibility of duplication in these figures, but so far as we have been able to ascertain, they all represent individual work.)

The mere enumeration of deaths during spinal anesthesia, however, is not sufficient to gain a clear understanding of its mortality. Each of these deaths must be analyzed so that we can say definitely which ones were and which were not due primarily to spinal anesthesia. From the seventy-five deaths listed above, we are able to give a brief clinical summary of twenty-nine.

1. A man, aged 60, with gangrene of leg and thigh from crushing injury, moribund, died fifteen minutes after injection.

2. A man, aged 29, with avulsion of the arm at the shoulder, shocked and pulseless, was given a high injection, and trimming of the injury was attempted. Respiratory failure resulted but he was kept alive six hours with artificial respiration.

3. A debilitated man, aged 65, moribund from typhoid perforation with peritonitis of twenty-four hours standing, injected when nearly pulseless, died during the operation.

4. An infant, twenty-one months old, with miliary tuberculosis, peritonitis, and abscess of the lung, stopped breathing during an attempt to find the lung abscess by operation.

5. An obese man, aged 55, with extensive intestinal gangrene and advanced diffuse peritonitis, died during operation.

6. A woman, aged 45, with diabetes and chronic nephritis, sustained fractures of both femurs, pelvis and several ribs, and died of collapse and shock.

7. A man, aged 35, suffered from advanced tuberculosis with acute urinary retention.

8. A woman, aged 84, had a strangulated femoral hernia of six days duration, and fecal vomiting for two days.

9. A man, aged 72, suffered from a strangulated

hernia, with fecal vomiting 72 hours prior to operation.

*Comment.*—These patients were moribund. Death was inevitable no matter what anesthesia might have been used.

10. A man, aged 72, with strangulated hernia, rapid irregular pulse, died two hours after operation.

11. A man, aged 63, non-transportable, with ruptured appendix, died on the table.

12. A woman with ruptured uterus and dead fetus, died a half hour after injection without an operation being undertaken.

13. Patient died of shock.

14. Patient died of shock.

*Comment.*—Shock existed in all of these cases with low or falling blood pressure. Low blood pressure is the one definite contra-indication to spinal anesthesia.

15. A man, aged 43, had an enormous empyema with an extensive subcutaneous phlegmon of the chest wall. Cessation of heart action followed rapid evacuation of pus.

16. A man, middle aged, had a sudden cessation of the heart when evacuation of a large amount of pus from thoracic cavity was attempted.

17. A woman, aged 52, had a rib resected and three pints of pus evacuated.

*Comment.*—In our opinion, spinal anesthesia is not the anesthetic of choice in operations above the diaphragm—because the nerves for respiratory and vascular control are largely centered in the thoracic and cervical regions.

18. A woman, aged 60, had a gallbladder operation with peritonitis.

19. An obese man of 50 died following a gallbladder operation with peritonitis.

*Comment.*—One of the chief factors in the postoperative treatment of acute peritonitis is Fowler's position. To employ spinal anesthesia with safety, it is necessary that the head of the patient be lowered during the operation and for three hours following the injection. These positions are incompatible. On this account, in a severe peritoneal infection, where Fowler's position is a constant desideratum, spinal anesthesia would be inadvisable.

20. A patient received 9.5 grains of procain. Remained living while in Trendelenburg position, but died when brought to a level.

21. A patient received 9.5 grains of procain. Remained living while in Trendelenburg position, but died when brought to a level.

*Comment.*—These were toxic deaths due to overdosage.

22. An old man died from injection of butyn.

23. Toxic death due to stovain.

24. Toxic death due to stovain.

*Comment.*—Butyn is more toxic than cocaine; and both are too toxic for spinal or sacral anesthesia. Deaver condemns stovain for spinal anesthesia.

25. An eclamptic pregnant woman to be operated for cesarean section, received the spinal injection and died during a convulsion with cyanosis, apparently from asphyxia.

*Comment.*—Clinically this is an eclamptic death.

26. A strong, healthy man about to be circumcised, died following spinal puncture—without the injection of any anesthesia.

*Comment.*—Deaths from simple lumbar puncture occur occasionally. They are as yet unexplained but occur more often with cerebellar tumor, tumor of the brain or increased intracranial pressure.

27. A man, aged 43, with an extensive bilateral fibroid tuberculosis and subacute tuberculous laryngitis, suffered from a severe dysphagia especially for fluids. The spine was drained of 7.5 c.c. of fluid in a sitting posture and then 1.25 grains of apothetin dissolved in distilled water was injected. The patient was placed with head on a pillow and developed immediate fatal respiratory paralysis.

*Comment.*—This is an example of a central respiratory toxic death. The anesthetic solution gained entrance into the fourth ventricle and acted directly on the respiratory center. Injecting an anesthetic solution of lighter specific gravity than the spinal fluid in a patient sitting up, and placing the patient's head on a pillow after the recumbent posture was assumed, carried the apothetin into the cerebral ventricles. In our opinion, the injection of an anesthetic solution of specific gravity lighter than spinal fluid with the patient in the sitting posture is a very dangerous procedure.

28. A young woman being operated upon for retroversion of the uterus, developed collapse, was revived twice with adrenalin solution, but finally died when this stimulus was attempted for the third time, four and a half hours after operation.

28. A woman, operated on for cyst of ovary, died when the cyst was punctured, apparently of collapse.

*Comment.*—These deaths might have been due to the anesthetic. If they were, the cause is vasomotor paralysis, which is preventable.

Of the deaths of which we have some record, only four were attributable to the anesthetic, presupposing a knowledge of the subject such as should now be general. Taking a corrected mortality rate from the statistics which contain these

briefly reviewed deaths, and leaving out all other figures, we have

Administrations: 44,241

Total deaths due to anesthesia: 4

Mortality rate: 1:11,060.

A careful analysis of these deaths leads to certain conclusions, bearing which in mind one may make careful, safe selection of patients to be operated upon under spinal anesthesia. These conclusions will also aid in preventing any serious complications from this form of anesthesia and lift some of the stigma which pioneering work will always give to new drugs and new methods.

There are two main causes of death from spinal anesthesia. These are secondary to the action of the drug on the respiratory system and on the vasomotor centers. They may be summarized as follows:

1. Direct action of the drug on the respiratory system
  - a. Phrenic paralysis by attachment of the drug to the third, fourth and fifth cervical nerve roots.
  - b. Action of the drug on the respiratory center by its access to the fourth ventricle.
2. Anemia of the respiratory center due to vasomotor paralysis by fixation of the anesthesia to the white rami (splanchnic nerves) from the first thoracic to the second lumbar nerve roots. This is influenced by
  - a. The position of the patient.
  - b. Reduction of the blood pressure, resulting from the collection of large quantities of blood in the splanchnic region.
  - c. Accurate dosage of anesthetic.
  - d. Use of non-toxic drugs.

These last two items are almost too obvious to mention.

When the anesthesia, injected into the spine, rises to the level of the first thoracic vertebra, the splanchnic vessels become filled with blood, drawing reserve from all the rest of the body. A fall in blood pressure is the prompt result. If the blood pressure remains below 80 mm. systolic for longer than two hours, the patient will very likely die.

A rise of the anesthesia to the level of the cervical vertebræ involves the origin of the phrenic nerve, and the higher it rises the greater the involvement. Paralysis of the respiratory

center may result from anemia of the nerve tissues, if the splanchnic vessels reduce the tension for a long enough time; or from direct action of the drug. Therefore, the control of the level of anesthesia in the spinal canal is of the utmost importance. After the damage has been done by the rise of the anesthesia to these centers, it is necessary to counteract the severity of the complication.

Two things, then, must be accomplished: (1) control of the level of anesthesia; and (2) counteraction of the vasomotor or respiratory paralysis when these complications arise.

If the level of anesthesia can be controlled, the second point need not concern us. Nevertheless, in cases of high abdominal operations, it may be necessary to encroach upon the region through which the white rami pass to the splanchnic area.

How can we control the level of the anesthesia? There are three factors concerned: (1) the specific gravity of the solution; (2) the diffusibility of the solution; and (3) the position of the patient.

If a solution of heavier density than the spinal fluid is used, it will gravitate to the depressed levels of the spinal cord. Conversely, if a solution of lighter specific gravity is used, it rises to the elevated portion of the canal.

It is desirable to have a solution which will not mix readily with the spinal fluid, otherwise the anesthesia, though dilute, will diffuse throughout the canal.

From the physiology previously discussed, it will readily be seen that the Trendelenburg position is the best for the patient, because through gravity it keeps the blood in the brain. By using a solution of lighter specific gravity and low diffusibility there is no chance for the solution to involve the cervical roots, and the anesthesia may be confined to the lumbar region. Injecting the patient in the recumbent position, rather than the sitting posture, will furnish an additional safeguard to the patient, for these same reasons. By proper technic of injecting in patients presenting no contra-indications, using accurate dosage of non-toxic drugs, with the addition of adrenalin or ephedrin, a respiratory or vasomotor paralysis is almost impossible.

To counteract these complications when they occur, there are certain procedures which have been recognized as curative. Of these, Babcock's methods represent the most comprehensive

and authoritative. Respiration stops: place a wisp of cotton over the mouth or nose of the patient and start artificial respiration by rhythmic pressure and release of pressure over the thorax. If air does not pass through the lungs, the cotton will remain undisturbed. In this case, it is likely that paralysis has taken place during complete expiration. Put the hand over the epigastric region, so that the stomach will not balloon out, place the mouth over the gauze-covered mouth of the patient and exhale into the patient. It is almost impossible to rupture the patient's lungs by the force of your expiration, unless the patient is a child. Then start artificial respiration, always watching the wisp of cotton to be certain that air is passing the respiratory portal.

An easy way to ascertain vasomotor disturbance is to take the blood pressure every few minutes following the spinal injection. If the tension has not fallen during the first ten minutes, it is not likely to fall at all. Be prepared to give an injection of adrenalin solution at once; a fall of 30 mm. or a fall below 100 systolic is sufficient indication to institute stimulating administrations. Inject enough saline with the adrenalin to raise the pressure to 100 mm. With the patient in the Trendelenburg position, the operation may be finished.

## SUMMARY

Mortality from spinal anesthesia, like the mortality from any new drug or method of equal danger, has been the result of improper technic, toxic drugs, over-dosages and misunderstanding of physiology. From past experience we know that a patient suitable for this anesthesia is one presenting a subdiaphragmatic surgical lesion, one in whom the Trendelenburg position is not contra-indicated, and one without hypotension. Using accurate dosage of non-toxic drugs, with the addition of adrenalin or ephedrin by proper technic of injection, makes practically impossible a fatal issue from respiratory or vasomotor paralysis, the common causes of deaths from this anesthesia. For the former, give artificial respiration; for the latter, Trendelenburg position with injections of fluid. The most important consideration is the blood pressure. Watch the blood pressure.

5 W. Lake St.

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# ABDOMINAL PREGNANCY, WITH REPORT OF CASE

HARVEY OGDEN SKINNER, M.D.

*Saint Paul*

ABDOMINAL pregnancy is one of the rarer conditions encountered in medical practice. For this reason every case should be reported, and the physician should remember when to suspect its possible occurrence.

## ETIOLOGY

Primary abdominal pregnancy is of such exceedingly rare occurrence that competent authorities have doubted that it ever occurs, although several cases appear to be well authenticated.

Practically, the condition is secondary to tubal pregnancy, being the result of a tubal abortion or rupture in which the embryo is not destroyed.

The etiology is therefore that of tubal pregnancy.

## PATHOLOGY

The embryo may escape in an intact sac. If this is ruptured a new sac forms, made up of fibrin and adjacent tissues. The placenta spreads out over the adjacent tissues and except for being thin is not different from normal. The blood vessels of these adjacent tissues are enormously dilated and many new ones are formed. The uterine changes are those of the preceding tubal pregnancy, with uterine decidua, etc.

## SYMPTOMATOLOGY

Since abdominal pregnancy is an end-result of tubal pregnancy, there is a history of this condition, and in this regard it is well to recall that carefully taken case histories are less atypical than individual findings.

Also there is a history of some occurrence that can be interpreted as the tubal rupture or abortion, even though it was not recognized as such at the time.

The abdominal pregnancy progresses in much the same manner as the normal pregnancy, but certain variations are usually noted.

In general the pregnancy is an uncomfortable and often painful one, with signs of peritoneal irritation, soreness, gastric and intestinal disturb-

ances, bladder disturbances and general invalidism.

The fetus is usually carried higher than normal and may be found in positions impossible within the uterus and its movements are usually painful. It also seems abnormally near the surface, as noted from heart sounds and manipulations.

Pelvic examination ought to reveal the empty uterus, somewhat enlarged, and when this can be made out and identified as such and not mistaken for a fibroid or other tumor, the pregnancy is obviously abdominal.

## DIAGNOSIS

Diagnosis is concerned mainly in differentiating the extrauterine from the normal pregnancy and beyond question the most important point is knowing when to suspect it.

When pregnancy continues after a disturbance which may have been considered a threatened miscarriage and especially when the history resembles that of a tubal pregnancy, abdominal pregnancy should always be suspected.

The diagnostic points are:

1. The pregnancy is abnormally uncomfortable and disabling.
2. The sounds, form and movements seem abnormally close to the surface.
3. The position is from slightly to greatly abnormal.
4. The uterus is demonstrated apart from the fetus.

## COURSE

In cases not operated the fetus dies soon after the tenth month. Usually there is a process of maceration and partial absorption with subsequent abscess formation and death of the mother from sepsis.

Rarely, the fetus undergoes a process of mummification or calcification (lithopedion) only to be found later (even many years later) by accident

or by exploratory operation in the search for the cause of chronic invalidism.

#### PROGNOSIS

Prognosis, especially for the fetus, is not good. The most comprehensive study of this feature has been made by Beck.\* He searched the literature from 1809 to 1919 and reviewed the answers to questionnaires sent out to over 200 obstetricians, and found only 262 cases upon which operations were performed after the fifth month and a living fetus extracted. Of the 244 in which the dates were given, only forty-nine lived a year and only thirty-two lived as long as a month, while 146 lived only one and two days. About half of the babes are deformed from the pressure of neighboring parts.

Beck's analysis shows a maternal mortality of 35.8 per cent for the entire series. Prior to 1890, or before the days of asepsis, the figure was 68 per cent. In the next ten years it was 35.3 per cent, and the next ten 21.9 per cent and the last nine only 18.1 per cent.

In the non-operable cases (*i.e.*, those moribund at the time of operation) the risk to the mother began with the thirty-ninth week and increased rapidly although the operative risk was much less after the thirty-eighth week.

De Lee urges operation as soon as the diagnosis is made, but Beck's figures seem to show that there is little added risk to the mother by waiting for a viable child up to the thirty-eighth week, if the patient is kept under careful observation, and that operation at this time gives the best chances for the mother to survive the operation and the babe to live.

#### TREATMENT

There is only one treatment, laparotomy, and that preferably in the hands of one well skilled in abdominal surgery. The dangers are primarily hemorrhage and, secondly, sepsis. The problem centers on the handling of the placenta, which should be examined with greatest gentleness because of the danger of profuse uncontrollable hemorrhage.

If the placenta is so located that its blood supply can be controlled and removal accomplished without serious injury to such vital structures as the intestines, this should be done. When attachment is to the uterus, broad ligaments or omen-

tum, these tissues are well removed en masse with the placenta. Removal, then, is the procedure of choice.

When the placenta is so located that removal is not possible without risk of hemorrhage or dangerous injury to adjacent parts, two other procedures are available.

1. The placenta may be left in place and the wound closed without drainage. The placenta is usually absorbed and if secondary infection should occur it can be handled by the usual methods. This is the procedure of choice where the placenta must be left and there is neither hemorrhage nor sepsis.

2. The placenta may be left in place, and the sac sutured to the wound and packed after the manner of a Mikulicz drain. The placenta separates in time and is expelled. Patients thus treated run great risk from sepsis, but it is the only thing that can be done when sepsis is already present or when there is bleeding that can be controlled only by tamponade.

#### CASE REPORT

Mrs. A. G. N., aged 40, well developed and nourished, gave a history of an appendectomy in April, 1909. She was married in June, 1909, and a six weeks gestation miscarried in 1912, and again in 1915. A full term baby was lost in a breech delivery in August, 1917. The left tube and ovary and adhesions resulting from the former operation were removed in January, 1918. A normal pregnancy resulted in a living baby in August, 1921. A miscarriage at five months occurred in December, 1924.

Menstruation, which began when she was thirteen years of age, has occurred regularly every twenty-one days, lasting five or six days, has been profuse and associated with little pain. The last period began on August 3, 1925, and was normal in amount and character.

During the early part of her pregnancy she suffered greatly from nausea and vomiting, being confined to bed therefrom when I first saw her, on September 15, 1925. At that time pelvic examination was made but with little satisfaction because of post-operative adhesions. The uterus was slightly enlarged, and not especially tender. The cervix was soft.

Toward the end of September (in the seventh week of pregnancy) she had excruciatingly severe pains fairly high on the left side of the abdomen, which she described as "gas pains." There was a degree or two of fever and some tympany and considerable tenderness which were temporarily relieved by Noble's enemata. Suspecting an acute surgical abdomen, I called in surgical counsel, the diagnosis of threatened abortion being made. Sedatives and opiates were given and this crisis subsided.

\*Jour. Am. Med. Assn., Sept. 27, 1919.

Within a week the patient passed a "small piece of skin" which was not saved for examination, flowed for a day or so and stopped. She was treated expectantly, but there was no evidence of retained fragments and it seemed reasonable to suppose she had passed everything in the toilet without her knowledge. The nausea stopped, the appetite returned and the patient soon regained normal health.

In the middle of December she reported that she believed she was pregnant after all, for she was enlarging normally and was beginning to feel life. This coincided with the failure to find the products of the miscarriage and therefore aroused no suspicion of abnormality. From this time on the pregnancy seemed perfectly normal, with no unusual pain or disability. The fetus laid longitudinally and no higher, in her estimation, than in her two other pregnancies.

About the middle of May, 1926, the patient being at term, castor oil and quinine were given to induce labor, without results.

On May 23, vaginal examination revealed that the cervix was unreachably high in the left fornix. It was thought that the uterus was in an abnormal position due to the adhesions from her numerous operations, and immediate cesarean section was advised. The same counsel was again called and this diagnosis and treatment were sustained.

An incision was made one inch to the right of the median line. In the place of the uterus was a large thin-walled sac containing a rather large amount of light-brown turbid fluid, which was opened and from it was removed a full term female fetus, which had been lying in a right occipital position. The uterus, which was the size of a three months pregnancy, had been pushed upward and to the left. The placenta was attached to the lower right side of the uterus, the right tube, and broad ligament and the pelvic bowel. As its removal could best be accomplished without hemorrhage by a hysterectomy, this operation was performed, and the abdomen was closed without drainage.

Examination of the tube disclosed no rupture, but

the fimbriated extremity was greatly dilated, showing that the causal condition was the less usual one of tubal abortion.

The patient ran a fairly satisfactory post-operative course. There was some distention of the abdomen for the first three or four days, which was relieved by enemata and gastric lavage. Later there developed a mild phlebitis of the saphenous vein of the right thigh. The temperature did not exceed 100.2, and she left the hospital on the fourteenth day after her operation, although she stayed in bed for one week after her return home. She has remained well ever since.

The baby was somewhat deformed, the right side of the face about the jaw being flattened and smaller than the left. The deformity is now practically gone and the child is normal in every way.

#### COMMENT

The unusual features of this case are:

1. The pelvic adhesions, which obscured the acute condition.
2. The absence of acute pelvic tenderness ten days before the abortion.
3. The absence of uterine bleeding before the abortion.
4. The location of the abdominal pain on the side from which the tube had been removed.
5. The freedom from abnormality of the abdominal stage of the pregnancy.

Under these circumstances, a diagnosis of abdominal pregnancy was not possible except by suspicion and then only because of the generalization that this condition should be thought of in any case of pregnancy which continues after a threatened abortion, supported by the occurrence that could have been interpreted as the time of abortion, although it was not possible to so interpret it at that time.

#### ARSAMINE

According to the advertising for "Arsamine" of S. Lewis Summers, this preparation is "diarylarsenate," but no definite statement of composition is made. It is believed that a constantly increasing number of physicians are refraining from the use of proprietary medicinal articles which have not been reported on favorably by the Council on Pharmacy and Chemistry. This is in accordance with the report of the Board of Trustees of the American Medical Association to the House of Delegates in 1927 urging support of the work of the Council by confirming the use of proprietary drugs to those found acceptable for inclusion in New and Non-official Remedies. The claims that have been made by Dr. S. Lewis Summers for Belsal which were the subject of a report "Belsal Another Alleged Synthetic" (Jour. A. M. A., February 21, 1925, p. 611) constitute ample justification for questioning the claims made for Arsamine. (Jour. A. M. A., September 1, 1928, p. 664.)

#### ALZAMON IRA LUCAS MEETS HIS WATERLOO

Alzamon Ira Lucas, who has a long record of quackish activity ranging from "mind reader," "sex" lecturer to promotor of an "American Super-Race Foundation" has been found guilty on the complaint of a woman who charged that he defrauded her of \$250 by falsely representing that he could cure her of lung trouble and "awaken life within her." According to newspaper reports Lucas is a negro; he denies this but admits a mixture of Indian, Dutch, French, Hindu, and Spanish blood. According to his advertising booklet, the "super-race" concern offered to teach members "how to prevent the birth of subnormal and degenerate children," and at the same time, "how to predetermine the sex and vocation of children." The health authorities and Better Business Bureau of Rochester, N. Y., were largely instrumental in securing a two to four years' sentence for this blatant quack. (Jour. A. M. A., September 1, 1928, p. 661.)

# CASE REPORTS

## ADRENAL HEMORRHAGE IN AN INFANT\* REPORT OF A CASE

LYLE L. BROWN, M.D.  
*Crookston, Minnesota*

Adrenal hemorrhage in the newborn is common enough. On the other hand adrenal hemorrhage in infancy, in older children and in adults is comparatively rare. A short search of the literature reveals a very meager bibliography covering this condition, which is rarely mentioned in any of the standard textbooks on Pediatrics. For this reason I believe it will be of value to report another case.

### CASE REPORT

A. D., a male infant, aged 15 months, was admitted to the Bethesda Hospital at 5 a. m. on April 1, 1928.

The family history is unimportant. The patient was the only child. The father and mother are both living and well. The weight at birth was unknown but he was born at full term. He had been breast fed for nine months, then weaned. He had never been ill and had developed normally. His terminal illness dated from the evening previous to his entrance into the hospital. He was in the best of health and spirits at the evening meal and ate his usual hearty supper. About an hour later his father noticed that he did not want to play and shortly afterward he vomited once. He was put to bed and his mother noticed that he was "hot." He became very restless during the night and at 2 a. m. the family physician was called, who found the temperature to be 106° by rectum, with no other positive physical findings. The physician suspected meningitis and performed a spinal puncture, and advised immediate removal to a hospital.

As they lived about forty miles distant it took about an hour to reach the hospital. During the trip, which was made by automobile, the patient became much worse and the mother noticed a black and blue mark on the child's cheek but thought it was a bruise.

Upon admission to the hospital the physical examination showed a well nourished male infant, semi-conscious, whose face, body and extremities were covered with a purpuric eruption. The purpuric spots varied in size from pin point to those measuring about two centimeters in diameter. He was extremely restless, moaning and tossing himself about the bed. The temperature per rectum was 106.4°, the pulse was feeble and around 200, respirations 65. The lips and nails were cyanotic and hands and feet cold to the touch. The skin was pale. The throat was negative. The heart was rapid and regular, with no murmur present. The lungs were resonant throughout, with a few

coarse mucous râles scattered throughout both bases. The abdomen was soft and relaxed. The liver and spleen were not enlarged and no tumor masses were palpable. The reflexes were apparently normal. An attempt was made to take a blood count, but, although the finger and heel were repeatedly punctured, no flow of blood was obtained. No urine sample was obtained.

The child's condition became progressively worse and he died in a state of collapse two hours after en-

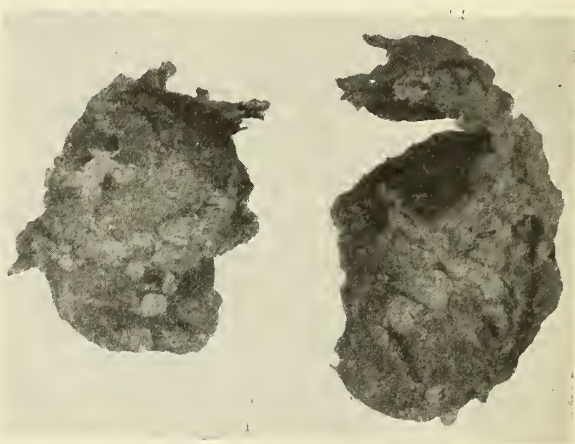


Fig. 1. Both kidneys together with adrenal glands attached showing intense hemorrhagic character of the adrenals. Right adrenal body sectioned.

trance into the hospital. Hemorrhage into the adrenals was suspected and an autopsy was asked for and obtained with permission to open the abdominal cavity only. The autopsy was performed three hours after death by Dr. M. O. Oppegaard.

### AUTOPSY REPORT

The body was that of a well nourished male child with quite marked post-mortem lividity present. Purpuric spots were present over the entire body. Upon opening the abdominal cavity nothing unusual was noted. The intestines, stomach and liver were found to be normal. The spleen was slightly enlarged and somewhat congested and was removed.

Both kidneys were removed, together with the adrenal glands. The kidneys appeared normal. Both adrenal glands were very dark in color and were intensely hemorrhagic, showing evidence of very recent hemorrhage.

*Anatomic Diagnosis.*—Hemorrhage into adrenal glands.

The spinal fluid was negative according to Dr. Erickson of Twin Valley, Minnesota, who performed the puncture.

### COMMENT

*Etiology.*—This case is not only of interest because of its comparative rarity but also because no etiologic

\*Presented before the monthly staff meeting at Bethesda Hospital, Crookston, Minn., September, 1928.

factor could be determined. Hemorrhage into the adrenals is usually brought about by thrombosis of the suprarenal veins, by bacterial infection or by the effect of toxins. Trauma<sup>1</sup> may be a cause and it is entirely possible that it was the cause in this case as the father of the child had been playing somewhat strenuously with him an hour or so before he became ill.

Pearl and Brunn,<sup>2</sup> quoting Lavenson, Brosser, Martena and others, classify the cases into five types as follows:

The peritoneal type resembling peritonitis, the asthenic type, the nervous type resembling the typhoid state, those cases in which sudden death occur and the last in which purpuric spots appear in the viscera and skin.

*Diagnosis.*—The diagnosis is extremely difficult during life and is rarely made except at postmortem, although Rabinowitz<sup>3</sup> says that "adrenal hemorrhage is of more frequent occurrence than hitherto reported and is unrecognized because of non-familiarity with its clinical picture."

*Prognosis.*—The prognosis is extremely grave and is hopeless in the cases of bilateral hemorrhage.

*Treatment.*—Very little can be done. If the hemorrhage is unilateral surgery may be resorted to; otherwise it is useless. The injection of the adrenal hormone and normal saline or Ringer's solution are the only medicinal agents of value.

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## MULTIPLE DIVERTICULA OF THE SMALL INTESTINE

### REPORT OF CASE

EDWIN J. SIMONS, M.D.  
*Swanville, Minnesota*

On account of the rather unique pathological condition found and the unexpected outcome, the following case is being reported.

Mr. J. C., white, unmarried, aged 57, gave the following history: At four o'clock in the afternoon, while pumping water, he was seized with excruciating pain in the center of the epigastrium. The pain was of such a severe and constant nature that the patient was compelled to lie down "doubled up" for some time before crawling on his hands and knees to the house, a distance of fifty feet. He was slightly nauseated, but did not vomit. He was not hungry and ate no evening meal. At approximately eight o'clock in the evening he was found crouched over on a chair, moaning with pain.

From the time of onset of pain until eleven o'clock,

when first seen, the pain had remained unchanged except that it had finally spread in extent until it involved a band-like area four inches in diameter across the upper abdomen. There had been no sudden effort or trauma before the onset of pain, and the pain was constant, not intermittent. He had not vomited; his bowel passages during the day had been normal. No urinary symptoms were noticed before or during the attack, and an absence of symptoms referable to heart and lungs was stated. He denied ever having had any venereal disease.

His past history was in every way negative, except that he stated that he had had "three attacks of typhoid fever before he reached twenty years of age," and that twice before, approximately eight and twelve years previously, he had had much more mild symptoms similar to those of the present attack, which lasted only one or two hours.

Physical examination revealed a real asthenic type of individual, of normal coloring, and approximately of stated age, wearing an anxious, haggard expression. His pulse was 84, temperature 98.4°, respiratory rate 20. The pupils were equal, regular, reacted to light and accommodation, and the reflexes all normal. Lungs and heart were normal. Only the abdomen revealed abnormal findings, which consisted of board-like rigidity across the whole upper side. This whole area was very sensitive to pressure, more so, however, in the center of the epigastrium. The rest of the abdomen was negative, and rectal examination failed to reveal anything of importance.

Tentatively a diagnosis of ruptured gastric ulcer was made, and immediate operation advised.

He was given one-fourth grain of morphine sulphate and transported six miles by sleigh and eighteen miles by automobile to the hospital, where he was seen in consultation by two physicians who confirmed the diagnosis, except that, due to the dull percussion note in the epigastrium, the ulcer was believed to be secondary to carcinoma. Leukocytes, as counted at the hospital, numbered 8,400 per cubic millimeter, and a urinalysis failed to give abnormal findings.

A laparotomy was performed by Dr. J. B. Holst of Little Falls and Dr. R. S. Steffens, with the view in mind of resecting or invaginating the ulcer, and establishing drainage if necessary. Upon opening the peritoneal cavity no free fluid or gastric content was found, and upon examination of the stomach no ulcer could be demonstrated. The small intestines, however, were distended with gas and were cyanotic in appearance. No pulsation of the mesenteric artery could be palpated, and the mesenteric veins were engorged. Upon following the bowel downward it was found that the discoloration extended for a distance of about three feet, with no distinct line of demarcation between the discolored portion and the normal bowel. In following the bowel from the apparently normal area toward the stomach, it was also discovered that about two feet of the mesentery from the duodenum downward was of a milky white color. This appearance was of uniform whiteness, and, to palpation, felt uniformly like that of the normal mesentery. There was a sharp line

of demarcation between healthy and white mesentery. As the bowel was followed upward it was found that at various points along the course of the bowel there were innumerable small outpouchings, or diverticula of the bowel, extending into the tissue between the layers of mesentery. The finger could be forced into the lumen of the bowel by invaginating the mesentery at the point of junction of the mesentery with the bowel. Nine of such sacculi were counted, but many more were noted, the largest being about three centimeters in diameter, and the smallest about one and one-half centimeters. These diverticula involved part of the duodenum and jejunum.

The question arose as to the best course to follow surgically. Due to the patient's general condition, the fear that definite gangrene would ensue and spread to involve parts of apparently normal bowel, and the seeming inevitability of death, it was deemed advisable to close up the abdomen without doing any resection of the bowel. This procedure was followed after stimulating the discolored portions of the intestines with hot applications.

Arrangements were made with the relatives for a postmortem examination, but an uneventful recovery of the patient and his discharge from the hospital on the sixteenth day made such a course impossible. The patient has enjoyed good health for the past eighteen months.

Upon seeking the opinion of Dr. E. T. Bell, Head of the Department of Pathology, University of Minnesota Medical School, the following answer was received: "My interpretation would be as follows: (1) It is evident that there was a temporary occlusion of the circulation of the three feet of small bowel that was partially infarcted.

"(2) It is also clear that there was not a thrombosis of either artery or vein, since, when an area so large is involved, the process would surely have gone on to gangrene and not to recovery.

"(3) There are two possible interpretations of the lesion in the mesentery which caused a temporary vascular occlusion: (a) rupture of a lymphatic vessel with extravasation of chyle into the mesentery; (b) an inflammatory lesion of the mesentery with edema resulting in temporary occlusion of the vessels. The color and consistency of the mesentery favors the former interpretation. I believe therefore that you were dealing with an extravasation of chyle into the mesentery resulting from rupture of a lymphatic. Recovery was due to the fact that the exudate was absorbed and the pressure on the vessels released before actual gangrene occurred."

## MALTA FEVER

### REPORT OF CASE

A. B. STEWART, M.D.  
*Owatonna, Minnesota*

Having just read the report of a case of *Brucella Melitensis* Abortus Infection in man, by Drs. Harri-man and Edlund, in September MINNESOTA MEDICINE, I am prompted to report the following.

On January 1 in the forenoon there came to my office E. M., male aged 21, a worker in a rendering establishment where dead animals, horses, cattle and pigs were handled and skinned.

He complained of a severe headache which commenced the night before and as he expressed it "feeling rotten."

Temperature was 101 and pulse 90.

The patient was advised to go home and to bed at once. I saw him again that evening when he was sweating profusely and the headache continued. The next morning he was feeling better and there were no symptoms except continued fever. He was quite "peevish" that I would not let him be up and at work. As the fever continued he lost his appetite and became tired so that he was perfectly willing to stay in bed.

Conditions continued the same until about February 1, when he began to improve and was able to resume his work March 1.

His pulse was seldom above 100 and the temperature was remittent and at times intermittent, being elevated to 100° and 104° in the afternoon daily.

The diazo reaction of the urine was negative. The blood pressure was low. On January 7, 12 and 23 the Widal test was negative. On January 26, a blood specimen was tested against bacterium tularense and bacterium melitensis (abortus). There was no agglutination when tested with bacterium tularense.

The following is a report from the Minnesota Department of Health, Division of Preventable Diseases, on the agglutination with bacillus melitensis.

"Dr. C. P. Fitch, Chief of the Division of Veterinary Medicine, College of Agriculture, \* \* \* has reported a complete agglutination in dilution 1-1000. Miss E. M. Wade, Chief of Main Laboratories, finds that there was complete agglutination in a dilution from 1:40 to 1:640. The finding of agglutination in such a high titer, we believe, is very good evidence of undulant fever."

Conclusion: In all cases of doubtful continued fever, if not culturally proved to be typhoid, the agglutination reaction for melitensis (abortus) infection should be considered.

## President's Letter

**T**HE value of toxin-antitoxin in the prevention of diphtheria has been thoroughly proven. The value of other vaccines and sera used in children is not so definite and unless one is following this work carefully it is hard to keep up with the changing opinions.

Some localities in this state are not using toxin-antitoxin to the extent they should. All pre-school children should be inoculated and the best time to do it is about eighteen months after birth. This work can be done by the attending physician at the proper time.

In order to stimulate interest and give the latest information in regard to the whole subject, the Medical Education Committee of the State Medical Association is preparing to furnish qualified speakers to go before any Society asking for them and give demonstrations of the use of toxin-antitoxin and talks on vaccines and sera in children.

The Minnesota Public Health Association has offered to help us interest the public, and the State Board of Health will furnish the toxin-antitoxin wherever necessary.

With a properly carried out campaign of this kind it would seem easy to protect most of the children in Minnesota from diphtheria in a comparatively short time.

For further information write the Secretary's office, 11 West Summit Ave., St. Paul.

*C. B. Wright*

# EDITORIAL

## MINNESOTA MEDICINE

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Vol. XI. NOVEMBER, 1928 No. 11

## Blood Groups

In the majority of hospitals in the United States if there is need for a universal donor, for one whose corpuscles will not be agglutinated by the serum of any patient, the laboratory selects a group IV donor. That laboratory is using the Moss classification of blood groups. In other hospitals, the staff would understand that this type of donor was in group I, thus following the Jansky system. In still other institutions the report on blood groups would read "Jansky group I (Moss group IV)." This confusion has arisen from the attempt made a few years ago by the American Association of Pathologists and Bac-

teriologists, the American Association of Immunologists, and the American Medical Association, to substitute the Jansky nomenclature for the well-known Moss method. The attempt was made because of prior publication by Jansky of a description of four human blood groups.

Now there is an attempt to clarify the situation by a further substitution, for both classifications, of the original Landsteiner letters representing the agglutinogens in the corpuscles of the four groups. Thus Moss group I (Jansky group IV) becomes group A B.; Moss group II (Jansky group II) becomes group A; Moss group III (Jansky group III) becomes group B; Moss group IV (Jansky group I) becomes group 0 (zero). This recommendation proposed and approved in 1927 by the American Association of Pathologists and Bacteriologists and the American Association of Immunologists, was also accepted and approved by the American Society of Clinical Pathologists at their annual meeting in Minneapolis in June of this year. It is somewhat difficult to foretell how soon the medical world will become familiar with this proposed change, and whether it will accomplish the desired purpose of bringing order out of confusion.

At the Mayo Clinic, where the Moss classification has been used, reports are now made as follows:

"Blood group one (A B); blood group two (A); blood group three (B); blood group four (0)."

A. H. SANFORD.

## Group Medicine

Dr. Joseph Collins, renowned neurologist and popular magazine writer, who has already looked at Love, Life and Literature to the education and entertainment of his readers, now, in Harpers for July, 1928, looks at group medicine and decides that, on the whole, it is good. He considers it a forward movement, following directly in the footsteps of "Big Business" and of the other professions which have accomplished so much through organization.

He admits that it is not the ideal way to prac-

tice medicine, which would be for one man to have, at his finger tips, the accumulated knowledge of the medical world as well as the assistants and mechanical measures necessary for modern diagnosis. But so much knowledge could not be accumulated in one lifetime and the capital for the needed accessories would be greater than is usually available to one man; therefore the next best thing is group medicine. This should bring better results to the patient because he could save time and money by consulting several doctors all in one firm; he would be protected from the consequences of fee splitting and from individual exploitation; he could more easily locate a reputable group than a reputable individual; he could be sure of a more thorough examination due to the large number of available diagnostic aids; and there would be, between chiefs and associates, someone always available to take care of him at any time. In a reputable group (there will, of course, be others) will be less chance for individual members to practice "buncombe," less chance to be dictators and faddists and less opportunity for the display of jealousy, envy and covetousness.

On the other hand, there is the possibility of the loss of some of the time-honored virtues of the medical profession. There would, of necessity, be a loss of the old close contact and confidence between physician and patient; the possibility of betrayal of professional confidence because of the necessary dissemination of history details among different confrères; and the possible loss of the humanitarian point of view. To avoid these pitfalls, the members of the group must be ever on their guard. They must be sure not only of a head (for administration) but also a heart (for coöperation); they must choose their men with great care and with attention to ideals as well as ideas, and they should select them while they are yet "plastic and malleable" and can still learn to blend their competency with culture and understanding; and, above all else, they must avoid the impersonal point of view.

Dr. Collins further believes that organization along this line may correct some of the time-honored sins of the medical profession. It might remove the great discrepancy between the monetary rewards of the surgeon and the diagnostician; it might help the rich to select their physician for his professional standing rather than for his bedside manner, which may cloak

second or third class ability; it might work for and accomplish endowed hospitals and medical care for the neglected "middle class"; and it should develop a new and much needed specialist, the therapist. The therapist should be interested in palliative measures as well as in cures; he should be easily conversant, not only with drugs, but also with physical agents of all kinds and with diet in the broadest sense of the word; he should know "something about disease and everything about its possessor. Above everything he should realize that hope is man's friend and fear is his enemy."

Therefore, in the opinion of Dr. Joseph Collins, group medicine must come because it is the trend of the times and because, on the whole, its advantages outweigh its disadvantages.

MARGARET WARWICK, M.D.

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#### DR. WARWICK LEAVES

It is with regret that we announce the resignation of Dr. Margaret Warwick as assistant editor of the journal. Dr. Warwick has had supervision of the book reviews appearing in the journal for the past year and that department will suffer by her discontinuance of this editorial work. Dr. Warwick leaves this month to assume her new duties as pathologist at the Millard Fillmore Hospital, Buffalo, New York. Book reviews, for the present, should be sent directly to the editorial office of MINNESOTA MEDICINE, 2429 University Avenue West, Saint Paul.

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#### MISCELLANEOUS

##### STATE BOARD OF MEDICAL EXAMINERS

Re: CHARLES ROSS (alias) R. J. Dietrich:

The above man, whose true name is unknown, assumed the name of Ross J. Dietrich, a licensed practitioner of this state, and attempted to operate a hospital at Pine River, Minnesota.

His place was closed by order of the Medical Board August 15, 1928. The original Dr. Dietrich is practicing at the present time in Kansas and is in no way connected with the fraud attempted by "Ross."

"Ross" was employed as a pathologist by one of the Minnesota clinics several years ago, and while there he learned of the original Dr. Dietrich, who was raised in that vicinity.

The extent of the operations of "Ross" did not come to light until he left the state in August, this year. He is indebted to people in Minnesota in excess of

\$1,000.00 and admitted to our legal investigator that he gave a check without sufficient funds to cover the same for the purchase of office equipment. This check was in the sum of \$1,200.00. He claims to be an M.D. but has no credentials of any kind to back up the statement. He also claims to have been born in Europe, but at the time Mrs. Dietrich gave birth to a child at Pine River he stated that he was born at Mankato, Minnesota. He is about 40 years of age, five feet eight inches in height, dark complexioned and weighs about 150 pounds. His hair is quite thin, black in color.

This man has absolutely no license of any kind to practise in Minnesota. He is in New Hampshire at the present time and a complaint will be filed against him if he returns to this state. He blames his present predicament to financial and domestic troubles. He is very evasive in his answers and only admitted what he did when he was convinced that the information was in the possession of the Board. He came to Minnesota the second time from Summit, New Jersey, his departure from there being occasioned by the same circumstances as his hasty exit from this state.

The record of this man shows him to be an impostor and that he is guilty of several other crimes in connection with his attempt to practice medicine. He will be prosecuted to the limit of the law if he returns to Minnesota.

Re: STATE VS. ROBERT G. ERRINGTON:

The above party is an unlicensed practitioner who has been operating in the western part of Minnesota for the past five years. He claims to be a naturopathic doctor and in the past has been known as Kanawana, the Indian doctor. Errington has been making his home at Bellingham, Minnesota, but he has been making trips to various parts of the state.

Early in 1927, Errington was found guilty by a jury in Lac qui Parle County of practising medicine without a license and was fined \$100.00 by Judge Kvale. This apparently had no effect on the defendant for he remained in the business.

In April of this year our investigator filed two complaints against Errington, one charging him with a violation of the Medical Act and one charging him with a violation of the Basic Science Law. On June 20, 1928, Errington entered a plea of guilty at Litchfield before Judge Baker to the charge of violating the Medical Act. The Medical Board recommended a straight jail sentence and Errington was sentenced to six months in the county jail at Olivia, five months of the sentence being suspended on the condition that he refrain from practising.

After Errington was sentenced he made an attempt to escape his jail sentence by withdrawing his plea of guilty; in this he was not successful and as a result he entered the Renville County jail August 27, 1928, and he left September 25, 1928.

The charge to which he entered a plea of guilty involved his taking \$250.00 from a farmer north of Bird Island, for which sum he was to "cure" the farmer's wife of "heart dropsy." The lady died within sixty days after the initial treatment from Errington.

There is still another charge pending against Errington in Lac Qui Parle county—the Basic Science complaint.

He is out on bonds of \$1,000.00 in connection with this matter. This case involves the taking by Errington of \$500.00 from a person in Bird Island, for which amount Errington was to cure a daughter of infantile paralysis. This case comes up at the next term of the District Court.

Re: STATE VS. EWALD:

The above party, Mrs. Emilie D. K. Ewald has been operating at Olivia, Minnesota, since May 25, this year. She has been advertising as a naturopathic physician but when she was interviewed she stated that she was only doing massage work.

She has no license of any kind. She is a lady of about 60 years of age and has been coming into this state for several years. She spends only the summers here, spending her winters in Kansas and Oklahoma.

This matter was first investigated June 1, 1928, and because of the plea of Mrs. Ewald, at that time, to be given a chance to move out of the state, no complaint was filed. She did not leave, however, and was so interested in what was going on that she was in Litchfield, Minnesota, June 20, when Errington entered a plea of guilty to a violation of the Medical Act. Mrs. Ewald was at the court house and mistook the representative of the Medical Board for Errington, much to her embarrassment.

On August 16, 1928, two complaints were filed by our investigator, one charging Mrs. Ewald with maintaining an office for the diagnosis, treatment, etc., of an ailment, and a complaint charging her with using a word or words indicating that she was engaged in the healing art as a "naturopathic physician." Mrs. Ewald had not seen fit to keep her word and refrain from practising. After a preliminary hearing Mrs. Ewald was held to the District Court under bonds of \$1,000.00. On September 29, 1928, Mrs. Ewald entered a plea of guilty to maintaining an office, etc., in violation of the Basic Science Law and she was sentenced by the Court to 30 days in the Renville county jail; the sentence was suspended indefinitely on the condition that she refrain from practising healing in Minnesota and that she leave the state. Mrs. Ewald formerly had an office in Ponca City, Oklahoma and she desires to return to Oklahoma. If Mrs. Ewald attempts to practice healing in this state she will not only be punished for the second offense but she will have to serve the jail sentence above imposed.

## A PAGE FORUM OF THE ✧ COMMITTEE ON PUBLIC HEALTH EDUCATION ✧

### Newspaper Publicity

The question of newspaper publicity by and for the medical profession is a serious problem. Many organizations just now are passing resolutions providing certain forms of publicity. A good many complaints come to us from various parts of the State alleging individuals or groups of using illegitimate methods for newspaper publicity and otherwise. The following are comments taken from a three column front page article of one of the newspapers of our larger communities; it shows the severe criticism of the action of the local medical society.

"At the regular meeting of the — County Medical Society, the following amendment was passed: "No member or organization shall in any way whatsoever permit his name to appear in print in connection with any patient; or in any other way, unless sanctioned by the — County Medical Society."

"To show our willingness to coöperate to some little extent in this laudable effort of the — County Medical Society to improve its ethics we have deleted the name of the Secretary from the above notice, as we did not have time to have the Society called in session extraordinary to pass upon our rights to publish the Secretary's name.

"The only names of doctors we are still left with permission to publish are those of the "irregulars" the osteopaths, chiropractors, nature healers, etc. It would be an awful blow to us if they adopt a Code of Ethics that is subject at any time to amendment.

"Under this amendment when Dr. Blank runs for a position on the school board he would have to have the Medical Society called together in solemn assembly to grant him permission to have his "name appear in print on the ballot." Would he get it? We would say not. . . . When Dr. Blank makes a hole in one at the golf links we will publish the fact without his having to get permission of the local Medical Society.

"The directory has the names of all the doctors and perhaps we had dare publish these names, which of course appear in the directory for the last time in print. When the next directory appears, unless the amendment is amended, the physicians cannot consistently permit their names to appear in print in connection with any patient. The only alternative for them is to agree not to take for a patient any person whose name appears in the directory.

"We don't know what the awful penalty is going to be for publishing the names of doctors. When a tragedy occurs we will publish the names of attending physicians, because the people want to know who get those jobs. We are going to take a chance of publishing the entire list of the healers of men. They all look alike to us.

"We like them all. It is a hard life they lead. We are sympathetic. We know that it is the doctor's bill that is paid last. There are so many installments to pay on autos, radios, golf sticks, washing machines, etc., that there is but little left for the man who saves us from slipping over the brink."

## REPORTS AND ANNOUNCEMENTS OF SOCIETIES

### NICOLLET-LE SUEUR COUNTY MEDICAL SOCIETY

The annual fall meeting of the Nicollet-LeSueur County Medical Society was held at the Hotel Nicollet, St. Peter, Thursday, September 27, 1928.

Nineteen members and guests attended the dinner.

The Society was called to order by the Vice-President, Dr. Swan Ericson.

The minutes of the last meeting, Dec. 13, 1927, were read and approved.

The Board of Censors reported favorably on the application of Dr. Clifford Goforth, University of St. Louis, 1926, for membership in this society.

On motion Dr. Louisa Kirschbaumer, University of Vienna, 1918, was elected member of this society.

For the Committee on Extension Course of Instruction Dr. Ericson made a report at length. He informed the society that such instruction course was in operation at Mankato and that several members of our society were in attendance. He urged the society to secure a course nearer home and praised the merits of such work and its little cost.

For the Committee on Fee bill, Dr. M. L. Strathern spoke especially on the matter of the efforts of the State Board of Health to induce a state-wide movement in the use of toxin-antitoxin to eradicate diphtheria. The cost of such treatment was discussed. Then on motion it was ordered that \$1.00 be charged for each injection plus the cost of the material.

The secretary then presented a communication from Dr. Martin, President of the Gorgas Memorial. On motion Dr. Strathern was appointed to collect from members the balance to make up the desired \$100.00. At this time the amount raised was \$65.00.

The Secretary read some of the important communications from the State Association on Control of Lay Health Agencies; "The Guide Post" and its campaign against organized Medicine; figures of total membership of State Association. The notice that the President of the State Association was open to calls to attend meetings of county societies was presented. It was the sense of the meeting that the president should be asked to attend the next meeting of our society.

The Secretary reported on the Conference of Secretaries of January last, expressing the opinion that these conferences did much to strengthen and consolidate the state organization.

The delegate to the State House of Delegates, Dr. Swan Ericson, reported on the summer meeting of that body. He spoke of the discussion there on the matter of Public Health Agencies and what power the State Board of Health should exercise among these health societies.

The following scientific program was presented:

"A case of a long wire pin in the heart eighteen months," Dr. Peterson.

"Vaccines as therapeutic and prophylactic agents—with report of cases," Dr. Holtan.

"Organotherapy—with report of cases," Dr. Kirschbaumer.

"Report of a case of fracture of hip; and a case of postpartum hemorrhage," Dr. McKeon.

Following a long and free discussion of the papers, the meeting thanked the St. Peter doctors for their hospitality.

The meeting then adjourned.

J. W. DANIELS, M.D.,  
Secretary.

### MINNESOTA PATHOLOGICAL SOCIETY

At the meeting of the Minnesota Pathological Society held Oct. 16, 1928, the following program was presented:

1. Report of two cases of pellagra of local origin. Dr. H. O. Altnow.

2. Postmortem studies of four cases of poliomyelitis from the present epidemic. Dr. J. S. Harter.

3. A case of multiple aneurysms of the pulmonary arteries. Dr. Wm. A. O'Brien.

4. A fatal case of pulmonary silicosis. Dr. E. T. Bell.

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## OBITUARY

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### Dr. C. Peterson

Dr. C. Peterson, 71 years of age, county physician and a resident of Steele county for over 45 years, died at his home in Owatonna Sunday morning, September 23, 1928. Dr. Peterson had been a diabetic patient for seven years although he was confined to his bed for only one day preceding his death.

Christian Peterson was born in Denmark, April 5, 1857, the son of Mr. and Mrs. Cresten Peterson, natives of Denmark. The father died when his son was 12 years old, just six years before the family migrated to America.

For a number of years after coming to America Christian Peterson followed various lines of work, moving from one city to another and advancing further and further into the Middle West. He was first located at Perth Amboy, N. J., remaining there three years before going to Cleveland, Ohio, where he spent a year working on the lakes. He moved to Clinton, Iowa, in 1876, being employed there as a clerk in a store for a year preceding his entrance into the high school at Ann Arbor, Mich. He later attended the medical department of the University of Michigan for a year, this being followed by a year's employment as a pharmacist in Detroit, Mich.

In 1880 Dr. Peterson entered the drug business in Owatonna, following two years of experience in Rochester. He went to Chicago in 1896, where he studied medicine at the University of Chicago, graduating from the institution the same year. His graduation from the university was followed by courses in both the Chicago Physicians' and Surgeons' College and the Illinois Medical College in Chicago. He had been in the practice of medicine and surgery in Owatonna since 1896. Dr. Peterson was married December 29,

1883, at Blooming Prairie, to Miss Anna Johnson, daughter of Mr. and Mrs. Jens Johnson. He had held a number of local offices, having served as county coroner one term and one term as justice of the peace. He was elected county physician in 1899 and had held the office almost continually for a score of years. He had been a member of the Steele County Medical Society and the State Association since 1912.

Surviving are two children, Alvin C. of Minneapolis and Miss Ella Peterson, who had been living with her father since the death of Mrs. Peterson; two sisters, Mrs. C. F. Therkelson of Portland, Ore., and Mrs. Mary Anderson of Houston, Texas, and one brother, Hans Peterson of Eugene, Ore.

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## OF GENERAL INTEREST

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### AMERICAN RED CROSS

In 1928 the American Red Cross received the support of more than 4,000,000 individuals. The organization is aiming to increase the enrollment for 1929 to 5,000,000. During the war the need for such an organization was obvious. In periods of peace there are plenty of serious emergencies, some of them involving thousands of families, such as havoc caused by tornado, fire and flood, which requires the services of an organization such as the Red Cross in rendering vital and prompt assistance on a large scale. The Red Cross solicits the active support through yearly membership of all those who appreciate the importance of relief measures supplied by this organization. The roll call this year will be instituted from Armistice Day, November 11, until Thanksgiving Day, November 29.

Dr. Temple Burling of Minneapolis has moved to Decorah, Iowa.

Dr. M. O. Nelson, of the Mayo Clinic, is now practicing in Tulsa, Oklahoma.

Dr. L. S. Ylvisaker has moved from Saint Paul to Red Bank, New Jersey.

Dr. W. P. Lee, formerly of Northfield, Minnesota, is now located at Winthrop, Maine.

Dr. Lillian Nye of Saint Paul has resumed the practice of pediatrics following a year's illness.

Dr. Lawrence M. Larson, formerly with the Mayo Clinic, Rochester, has located in Minneapolis.

Dr. O. V. Johnson has moved from Sebeka, Minnesota, to Fergus Falls, where he is practicing.

Dr. Ruben Nomland has left the Mayo Clinic for Chicago, where he will continue the practice of medicine.

Dr. H. L. Knight, formerly associated with Eitel Hospital in Minneapolis, is now located at San Pedro, California.

Dr. W. B. Linton has severed his connections with the State Hospital at Rochester and is now located in Minneapolis.

Dr. Max W. Alberts has announced the opening of his own office at 642 Lowry Medical Arts Building, Saint Paul.

Dr. Brand S. Leopard, formerly of New Richland, Minnesota, has recently established a practice in Bywood, Pennsylvania.

Dr. John F. Madden has disposed of his practice at Gibbon, Minnesota, and is taking a fellowship in dermatology at the University of Michigan this year.

Dr. Charles M. Tierney, formerly of Granger, Minnesota, has purchased the practice of Dr. R. H. Wilson at Harmony. Dr. Wilson is now located in Saint Paul.

Dr. Arnold Naegeli, a medical graduate of Marquette University, has finished his internship at St. Joseph's Hospital, and is now practicing with the Saint Paul Clinic, Lowry Medical Arts Building.

Dr. G. A. Paulson has gone to Columbia, South America, where he has charge of the Standard Oil Company hospital. It was erroneously reported in our last number that Dr. Paulson was practicing in Sioux City, Iowa.

Dr. C. C. Kennedy and Miss Gladys Lucille Travis, daughter of Dr. and Mrs. Arthur Travis of Minneapolis, were united in marriage September 1. Dr. and Mrs. Kennedy are now at home at 3032 Emerson Avenue South.

Dr. E. J. Huenekens of Minneapolis addressed the Omaha-Douglas (Nebraska) Medical Society at Omaha, Tuesday, October 9. The subject of Dr. Huenekens' address was "Focal Infection in Childhood; with Especial Reference to the Sinuses."

Dr. and Mrs. W. F. Braasch of Rochester, Minnesota, are expected to return from abroad November 11. While in Europe, Dr. Braasch visited the clinical centers of Germany, Paris, Berne and Vienna. He presented a paper before the Urological Congress in Berlin and also attended the French Urological Congress in Paris.

The project of a medical university center, started eighteen years ago by such well known figures as Dr. Samuel Lambert, Dr. Joseph A. Blake and Dr. Theodore Janeway, is now nearing completion. The Medical Center, New York, was dedicated to the service of humanity and the progress of science, October 12, before many thousands of invited guests.

Postgraduate demonstrations sponsored by the Minnesota State Medical Association and the Minnesota Public Health Association were held last month at the Southwestern Minnesota Sanatorium, Worthington, Minnesota. Those who took part in the program were: Dr. S. A. Slater, medical director and superintendent, Southwestern Medical Sanatorium; Dr. J. D. Davis, Mayo Clinic, Rochester; Dr. J. A. Myers, professor of preventive medicine, University of Minnesota, and Dr. Leo G. Rigler, Minneapolis. Some fifty physicians signified their intention of attending and so popular was the demonstration that two sections had to be planned. It is planned to conduct similar demonstrations at sanatoria in other parts of the state.

## PROCEEDINGS OF THE MINNESOTA ACADEMY OF MEDICINE

Meeting of Sept. 12, 1928

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Wednesday evening, September 12, 1928. Dinner was served at 7 p. m., and the meeting was called to order by the President, Dr. John E. Hynes, at 8 p. m.

There were 36 members and 1 visitor present.

Minutes of the May meeting were approved as read by the Secretary.

The Executive Committee recommended the election of Dr. Wm. Lerche, of St. Paul, and Dr. Wm. H. Magie, of Duluth, to Honorary Membership in the Academy, both having retired from active practice. A motion was carried that they be placed on the honorary list.

Dr. Drake read the Annual Report of the Secretary; also the Annual Report of the Treasurer. A motion was carried that these reports be accepted, with instructions that the Secretary notify delinquent members of their absences.

The annual election of officers resulted in the following men being elected for the year 1928-1929:

President .....Dr. C. N. McCloud, St. Paul

Vice-President.....Dr. Gustav Schwyzer, Minneapolis

Secy.-Treas. ....Dr. Carl B. Drake, re-elected.

Dr. McCloud was called to the Chair and thanked the members of the Academy for the honor given him in his election to the office of President.

DR. JOHN E. HYNES, retiring President, then addressed the Academy, the title of his address being "Some Constitutional Suggestions," in which he proposed for consideration by the Academy some changes in the Constitution and By-laws.

After some discussion of these various suggestions, Dr. Mann made a motion that the whole matter be referred to the Executive Committee for active consideration. Motion seconded and carried.

DR. S. E. SWEITZER, Minneapolis, then read a paper entitled "Pellagra and Alcoholism." Lantern slides were shown. (See page 719.)

### DISCUSSION

DR. ARMSTRONG: Day before yesterday I saw a man who I now think probably has pellagra; I was not sure then, but after seeing these pictures tonight I am reasonably sure the man has pellagra. I had never seen but one case before this. While I could not get much of a history from this man, as far as the gastrointestinal symptoms are concerned, I think probably it is the dry form of pellagra. His face is not involved. He complains of a great deal of irritation of the skin of the forearms which extends up to the elbows. I would like to ask Dr. Sweitzer about the terminal joints of the fingers. In my case these were all free except one.

DR. SWEITZER: It is usually free there. I think these cases are really pellagra. Up here we see very little pellagra and we don't know much about it. Down

south they make a diagnosis of pellagra on very slight symptoms, and a lot of cases do not have skin symptoms. We don't know exactly what pellagra is. In Crutchfield's cases in the south, he states that nearly all his cases had something else the matter with them.

So far as the alcohol is concerned, I do not believe it makes much difference what kind it is or where they get it. In foreign countries the question of alcohol as a factor in pellagra is well known; and these cases I reported drank a lot and did not eat much and that disturbed their metabolism enough so that they all had pellagra. While our series was running, Dr. Allen went over to Ancker Hospital in St. Paul and picked a case of pellagra out of the hospital there.

It runs in epidemics down south; perhaps a hundred of them at a time and then for several months they won't see any. I think there is a lot of work to be done yet as to whether it is purely a deficiency disease or due to some other cause.

DR. J. W. BELL: Apparently your cases were all males. That is a little unusual is it not? In the south the proportion, if anything, runs to the other side. Is not that true?

DR. SWEITZER: Yes, I think that is true, but ours were all males. Most of these would drink and then lie out in the sun in the park near the river for a long time. Apparently they drank a lot and did not eat much, and then were exposed to the bright sun for a long time.

DR. GILFILLAN: Is there anything characteristic about it in the way of a seasonal eruption?

DR. SWEITZER: In the Philadelphia epidemic it was a seasonal affair and then stopped. Ours is stopped now. When women are affected they nearly always have the V-neck in front where the neck is exposed. These men would get drunk and lie out on the grass and get tremendous doses of sun; and the lesions were confined mostly to the hands, forearms and neck. Since the weather has changed and there is not so much sunshine we do not see any new cases. In the south the cases come all year long.

DR. GILFILLAN: Do cases relapse?

DR. SWEITZER: Yes, they do relapse.

DR. GEORGE FAHR: The treatment which is most effective in these cases is a diet rich in vitamins. Last year they came in just about the same time of the year as this. One man last year had all the psychoses and was a typical case. His brother gave a history that for approximately three years the man had lived on nothing much but alcohol and had had practically no food to eat. The things usually used in the diet now are yeast, meat cooked rare, large quantities of fruits and vegetables uncooked. On this diet they usually get over it unless they have cord changes. Very frequently they do get over it, but relapse again on a deficient diet. In the cases this year I did not go into the histories so carefully, but they had very little food and got most of their energy from alcohol.

They would get drunk, then lie out in the sun all day long, and then get something more to drink. Apparently there are no more cases coming in now. To see four cases in one week is quite remarkable except in the Balkan countries and in the south. I think some

of these men did have some symptoms of psychosis. The first one I saw last year had definite psychosis. These cases of Dr. Sweitzer's got well very rapidly so far as the skin manifestations were concerned. All the patients had glossitis and at least four of them had diarrhea.

DR. DRAKE: Do you know of any change in the size and consistency of the liver in these cases? The condition of hemachromatosis shows a peculiar pigmentation of exposed skin surfaces and Mallory showed that copper in the "moonshine" consumed was an etiological factor.

DR. FAHR: There is quite a difference in the pigmentation in hemachromatosis.

DR. HAMMES: I was wondering if salvarsan would be of any value in pellagra. I saw a report somewhere where they claimed they were getting good results with salvarsan.

DR. SWEITZER: No, I do not think it would be of any value.

The meeting adjourned.

CARL B. DRAKE, M.D.,  
Secretary.

## BOOK REVIEWS

Books listed here become the property of the Ramsey and Hennepin County Medical libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

### BOOKS RECEIVED FOR REVIEW

**CRITERIA FOR THE CLASSIFICATION AND DIAGNOSIS OF HEART DISEASE.** By a committee appointed by the Heart Committee of New York Tuberculosis and Health Association, Inc., Harold E. B. Pardee, M.D., Chairman. 92 pages, price \$1.50. New York, Paul B. Hoeber, Inc., 1928.

**TEXT-BOOK OF UROLOGY.** For students and practitioners. Daniel N. Eisendrath, M.D., Urologist, Michael Reese Hospital, and Harry C. Rolnick, M.D., Associate Urologist, Mt. Sinai Hospital, Chicago, Illinois. 942 pages. Illustrated. Cloth, \$9.00. Philadelphia: J. B. Lippincott Company, 1928.

**WHY MEN FAIL.** Morris Fishbein, M.D., and William White. 344 pages. \$2.00. New York: The Century Co., 1928.

As the medical profession assumes more and more the leadership of the world, more and more questions of an economic nature are offered it for solution. The failure of so many men and women is a vital problem and upon a correct answer depends great sums of money in the business world, not to mention the happiness and efficiency of countless human beings. As a beginning, a large group of physicians in the field of mental hygiene met in Cincinnati to discuss the problem.

In addition to the discussion, eleven of them agreed to write articles on phases of this subject for newspapers and these articles are here published in book form. In the introduction William White states that one in every two hospital beds is for mental diseases, in other words as many as all other ailments together. Furthermore, there are great numbers of people whose affliction is not severe enough to confine them to a hospital. He feels that many people fail for preventable reasons, such as faulty mental make-ups, wrong attitude to life, and poor self-understanding. We are told "success is measured by the ability with which we are able to bring our passions, feelings, emotions under the control and guidance of our intelligence and so press them into the service of our ideals." One of the most common causes of failure is the attitude of one's parents and their methods of dealing with children in early life. Douglas Thom thinks that parents must neither abuse nor coddle their children but teach them independence and the ability to meet responsibility.

The first job often is an important factor in success in later life, because it so often leaves a deep impression upon one, but if one had had the right preparation a first failure does not leave its mark, but merely develops self-reliance. The entrance of women into the business world has brought into it the element of emotions and Smith Ely Jelliffe feels that one's emotional equipment is often more important than one's intellect. He thinks that sex prejudice is born of fear and can only be met by women recognizing its presence and meeting it tactfully and not by sex allure. He feels, however, that it will take many years for men to fully accept women in the business world and give them fair play. George Pratt points out that a man's wife is a prominent factor in his success and she can make him a failure by jealousy, fancied illness, being a "clinging vine," by nagging, by lack of faith in her husband, or by excelling her husband. On the other hand many wives are the reason for the success of their husbands. He also says that both bluffing and day-dreaming are attempts to escape from reality, and are the cause of countless failures, for "a mind, like a country, divided against itself must eventually fall." The bluffer obtains a position by exaggerating himself but fails to make good, while the day-dreamer spends his time in flights into unreality instead of concentrating upon the work of the moment.

Karl Menninger discusses depression and says that it is a sickness of the mind that may be cured as well as can bodily illness; often it can be cured by reasoning one's self out of it or by proving that it has no real foundation. Often it results in suicide, which is never the first act of the tragedy, and because of this possibility it should be early recognized and treated. Morris Fishbein discusses the beating of handicaps, both mental and physical, while William White tells of the tendency of the lazy to use imaginary handicaps for alibis, and says that these people work much harder in evading the work than they would in the doing of it.

Abraham Myerson considers that fear is a very prominent factor in failure by causing mental exhaustion, resulting in a loss of self-confidence. As antidotes for this condition he advises avoidance of chronic fatigue,

good care of physical health, avoidance of too much pleasure seeking that may make for satiety, being moderately ambitious and hardening the mind against small slights. One of the most interesting chapters of the book is of women failures written by Anita Muhl. She contends that women struggle against great handicaps and these are not physical but psychological. She thinks that women may approach business in the wrong state of mind because for them it is only a substitute activity for the great job they were intended for; that they are more emotional and personal than men; they may flaunt their sex by inappropriate clothes, jewelry and perfume; they too often play favorites for some weakling in the organization because of their strong maternal instinct; they are often held back by too great loyalty; they too often suffer from an inferiority complex; and all of these could be removed by education. She feels that the business woman should be "feminine but not aggressively female," she should stand firmly on her own feet and she should sublimate her maternal instinct in her work. But in order to do this she must choose work which gives her a sense of satisfaction and the joy of creation. Furthermore, she must discard the old idea that her usefulness ends with the menopause but realize and utilize the philosophic point of view, the mellowed judgment and the broader outlook which will then be hers. In the last two chapters, V. V. Anderson discusses and illustrates job misfits, and Herman Adler, home-made failures.

Although this book is written primarily for the laity it will hold much of interest for the physician. He will obtain from it a wider knowledge of human nature; a realization of the necessity of taking aspects of the patient, other than physical ailments, into consideration; it will emphasize the importance of home training for children and it will make his advice to patients and patients' families of much greater value. The importance of home training is being more and more emphasized on every side. If a child has a club foot or other physical defect, the parents are willing to spend much time and money in correcting it, but they fail to recognize mental defects which will cause him much greater trouble in later life than could any physical handicap. Or, worse yet, they will unconsciously or carelessly treat their children in such a way that mental handicaps will develop and cause failure in adult life. Such a book as this must give greater understanding of human failures and anyone, either lay or professional, should derive benefit from it.

MARGARET WARWICK, M.D.

#### NURSES, PATIENTS AND POCKETBOOKS.

Mary Agnes Burgess, Director Committee on the Grading of Nursing Schools. Published by the Committee, New York City, 1928.

This (which is said to be the first of a series of three volumes, now in process of composition) is a large book of over six hundred pages, dealing with the present-day problems of nurse training. While the book as it stands is the work of Dr. Burgess, "The Com-

mittee on the Grading of Nursing Schools" has come out with a statement that it presents a substantially accurate picture of the problems with which the committee is concerned, and may be regarded as constituting a report of the committee itself.

It is intended as a book of reference and is far too bulky to be read in its entirety by the busy physician. A careful reading, however, of the Introduction and Chapter I, with a hasty review of the diagrams and statistical tables found in it, and the summaries following the succeeding chapters will give him the meat of the coconut.

The book is entitled to careful scrutiny by Boards of Hospital Directors everywhere and thorough study by heads of Nursing Schools. Every nurse (student and graduate) should read it, and particularly will it be found interesting and enlightening by the "probationer."

It serves as another sharp reminder of the infinite and bewildering complexity of modern industrial life, and lays bare a few of the difficult problems and disturbing conditions which have resulted from the entrance of women into industry, the consequent disruption of the American home and the necessity of supplying substitutes (in some departments at least) for it.

The survey is a thorough one. Everybody in the nursing and hospital fields has been given an opportunity to voice an opinion relative to the causes of the problems and also to say something bearing upon their solution. Dr. Burgess, however, reserves her own conclusions. They will, we understand, be furnished when the situation has been sufficiently studied by her.

From a hasty perusal of the book, one gathers the following:

1. The nursing profession is rapidly becoming overcrowded and there is already a serious amount of unemployment.
2. Schools of nursing are not established primarily for the purpose of providing society with trained nurses, but for the convenience and profit of the hospitals which conduct such schools.
3. The standard of entrance requirements is in the majority of cases too low.
4. More graduate nurses should be employed by hospitals.
5. Marriage no longer serves as a means of thinning the ranks of practising graduates; most nurses who marry continue their careers, at least irregularly.
6. The pay is inadequate (when necessary loss of time is considered) for the maintenance of a standard of living expected of professional women.
7. The "private duty" nurses, as a class, are very unhappy under present conditions, and the morale and ideals of the girls suffer in consequence.
8. There is little opportunity to advance socially, or to save money.
9. The life of the nurse is a lonely and narrowing one.
10. The hospitals are, almost without exception, insufficiently staffed, the girls on "general duty" are overworked, and the quality of their work suffers because of this.
11. The future holds nothing for the nurse, but a

promise of a lonely, unhappy, loveless old age, in which poverty will compel a continuance of unremitting toil.

The profession of nursing has always been looked upon, by parents and daughters alike, as one characterized by respectability (even nobility), good pay, unlimited opportunities, and unquestioned social status. It seems, to a very marked degree, that the situation has changed for the worse, and that drastic treatment is required to correct it. Let us hope that Dr. Burgess, in the books which she has promised for the near future, will prescribe the proper remedy.

The book is the result of a serious, painstaking study of the problem of nurse training, a study which has entailed a tremendous amount of work. It will supply a long existing need and should be, and no doubt will be, widely read.

O. F. SCHUSSLER, M.D.

**DISEASES OF THE SKIN.** Henry F. Hazen, A.M., M.D., Prof. of Dermatology and Syphilology, Medical Department, Georgetown University. 3rd edition. 527 pages. Illus. Price, \$10.00. St. Louis: C. V. Mosby Co., 1927.

This compact edition contains concise and clearly written descriptions of skin disorders met with in practice.

The wording is brief, accurate, and well-ordered. The book is of value, especially, to the general practitioner and students. The various subjects are easily found and well discussed.

It is clearly evident that the author has a broad clinical and teaching experience which fits him unusually well for the task of presenting such a work to his colleagues in the practice of medicine.

L. R. CRITCHFIELD, M.D.

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# MINNESOTA MEDICINE

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## THE PHYSICIAN AND THE NEUROSES\*

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*Duluth, Minnesota*

UP to one hundred years ago the practice of medicine was still so closely linked with superstition and blind faith that to our present view it must have closely resembled the quackery of today. It is true that an occasional Pare, Vesalius, Hunter or Sydenham strove to place it on a plane above the level of the mediocre; yet the slow diffusion of knowledge through provincialism and the lack of adequate communication militated against coördinated progress. From the standpoint of popular demand the average of education of the laity was so low that it offered little direct influence in stimulating scientific development. The treatment of disease was a mad jumble of astrology, medicine, religion, polypharmacy and witchcraft, and with few exceptions the medical man who commanded the greatest popular recognition was the one endowed with the greatest charm of salesmanship and bombast, and not necessarily scientific attainment.

The pendulum swung backward in the nineteenth century, and with the development of its accessory sciences, such as chemistry, pathology, bacteriology, surgery, biochemistry and electrophysics, medicine developed an objective and materialistic phase, and brought forth a generation of physicians who became, as a result of their training, shortsighted as to the functional side of disease, so that an existence was almost denied to any disease or train of symptoms unless manifested by some objective evidence of its presence. It is not uncommon, even in recent times, to witness a tendency to dismiss patients who complain of the so-called "functional neuroses" as being the victims of their imaginative

figment, and not worthy of the expenditure of the time of the consultant.

It is unfortunate that the medical profession has so long neglected the intelligent consideration of this large segment of patients, comprising in a greater or lesser measure fifty per cent of medical practice. The fact that these patients do not reveal demonstrable organic or anatomic change makes our obligation and responsibility none the less keen, and their relative neglect has no doubt been a great factor in the fostering of quackery and unorthodox medicine. Psychology and psychopathology until recently were only new subjects, and their understanding limited to a few of the intellectual elite and an occasional psychiatrist.

Even today the basis of mental hygiene is inadequately taught in our schools, and the importance of hereditary factors, varying temperaments, and the inter-relationship between the conscious and unconscious, as influencing human suffering, are only meagerly stressed.

The physician, with his ability to rule out organic disease and his experience and contact with humanity which makes him by necessity, if not by choice, to a certain degree a psychologist, should be able to accomplish infinitely more for the neurotic if his efforts are directed along proper channels, than the various rituals of the chiropractor, faith healer and the Christian Scientist. With the ignorant, of course, one sometimes meets an obstacle that is well nigh insuperable, and with them the force of the argument rather than its logic is of the greater importance.

That we are on the threshold presently of a more intelligent treatment of the neuroses I think is due to the leavening process of evolution in medicine, which is keeping pace with

\*President's address before the Northern Minnesota Medical Association, Fergus Falls, Minn., Aug. 20, 1928.

the evolutionary trend in all other phases of life. The influences bringing about the emphasis on their importance is probably due to several factors: namely, the recognition by the medical profession that there is more to the healing of the sick than pure material objectivity; that the development of the more intelligent of the unorthodox crafts is due to neglect of this portion of medical practice; and lastly, that the laity are now taking an interest in the study of the more abstract side of life, and demanding a more enlightened profession.

It takes many years of experience before the medical man can properly evaluate all the little vagaries of the human mind and its influences on physical and mental comfort, and with many, through their inherent practical nature, it may always be impossible of achievement. The recent graduate, in spite of due precaution in his education, is ill fitted for this type of practice. The medical student today knows little of the theory of production and the treatment of the neuroses, largely because of the emphasis in his curriculum on the more material side of medicine, to the neglect of the more abstract psychical study. A perusal of any text-book on medicine will indicate that the functional side of disease is relegated to a few succinct paragraphs at the end of the book, and at best given over to consideration of the major neuroses and psychoses, as dementia præcox, manic depressive insanity and hysteria, which comprise only a small part as far as numerical influence is concerned in the subject of functional medicine. No doubt the teaching of these abstract sciences is difficult also because of the absence of receptivity on the part of the student, who is more interested in the objective side of medicine. Pedagogy gives us a hint as to the difficulty encountered in teaching these sciences to the young, as it is generally understood that the development of rational thinking must begin in early childhood with object lessons, in early youth and adolescence with the more rational sciences, and that it is only at the age of twenty or thereafter that it is possible for the average student to understand the more abstract studies, such as logic, ethics, psychology, etc. The average clinic patient used for teaching purposes, and the patients in the university hospital, are not likely to involve functional problems because of lack of interest and space, and the education of the student in

the care of the patient probably lies largely in the field of extramural or so-called "domiciliary" teaching, as at present practised in a few of our universities.

For many years we have been considering humanity with a uniform scale of evaluation, without due regard to the varying hereditary and environmental influences which play upon the organisms. The human nervous system is biologically relatively a recent development, and has no counterpart in our progenitors in the animal kingdom. It is a well known biological fact that at times of stress the more recently developed faculties are the first to exhibit evidences of strain. All human beings, regardless of temperament, are potentially neurotic if the stress of fatigue or intoxication is sufficient to bring the emotional and instinctive side of life to the foreground. In the neurotic these symptoms develop relatively more easily, so that in some people they are constantly on exhibition. Fetterman states a neurosis is an exaggerated response to an adverse physical or social stimulus, and Wechsler has stated that every normal person is in part neurotic, and every neurotic much normal. The neuroses are a trait complex; a personality, not a disease.

The influences which bear on life and personality may be regarded as a triangle, one side of which represents the hereditary influence, another the environmental, and the third the training and education, humanity experiences. One might say that heredity forms the clay of existence, and environment supplies the mould, but our experiences supply the color and pattern.

The hereditary tendency to the neuroses is well known to everyone, and is well borne out in some of the races in which inbreeding is common. As an illustration of the opposite tendency for people of a more hardy nervous stock to propagate a less nervous progeny, one may mention the people of Labrador, among whom Dr. Grenfell states he has never seen an instance of neurosis. In a climate such as Labrador affords, with all the laborious efforts and hardships necessarily endured, a nervous stock could hardly exist. The true colonist, explorer and pioneer is not easily a victim to nervous influence, but that even the hardest may break if the strain is sufficiently great is exemplified through the harrowing experiences of isolated and starving people when the instinct of self

preservation becomes foremost. The hereditary influence on the greater facility, with which the production of symptoms is brought about in the neurotic, no doubt is the main factor in predicating the high emotional state and the reduced censorship of the intelligence and will. This weakened side of the triangle implies weakness on the other two sides, and environmental factors, which only strengthen the adaptability of the non-neurotic, render the nervous person frequent opportunities for an exhibition of his failure of adjustment. It is because of the latter feature that the patient so frequently exhibits an arbitrariness of will and a selfishness of interest, because it is easier for him, and probably also more satisfying to his pride, to have the environment changed to suit his circumstances rather than that he constantly adjust himself—a process in which he usually fails. This failure of adjustment is one of the chief reasons for dissatisfaction with one's station in life, one's occupational, marital and social responsibility. This tyranny is one of the chief reasons for the statement quoted from Dr. Mayo that "the patient is miserable but the relatives suffer."

It is to be remembered that the essential difference between the neurasthenic and the normal person is largely one of personality and behavioristic alteration, and that he differs chiefly in his irrational and unnatural response to outside stimuli. One of the outstanding characteristics of the neurotic is his fatigability—the well known tired feeling—leading to a lowering of the energy that is conducive to lassitude, and a foe to happiness. The fatigue need not necessarily be from physical causes, but may be due to undue anxiety of the nervous type; to senseless tossing about during the night because of real or fancied worries; to an unhappy choice of occupation; worry over marital infelicity, and so on.

Associated with this fatigue there is almost invariably more or less depression—an outstanding characteristic of the disease. The patient is no longer filled with the joy of living, and becomes self-centered, introspective, self-analytic, and prone to become dull to the sensations of excitement or amusement. He ceases to care, and becomes anhedonistic. With fatigue, fear in the broad sense is a corollary. By fear we do not imply merely the more limited physical aspects of the term, but its broadest psychologic

application. It may involve the fear of death, dishonor, disease, or self depreciation. It includes most of the anxieties and phobias and obsessions, in many instances of which there is a localization of mental projection in some tract of the body—either in the cardiovascular, the genito-urinary, or the gastro-intestinal. It is this somatic localization of symptoms that alters the symptomatology of the neurasthenic. The fear lest the consultant does not give the proper recognition to his complaint, and because of the falling of his constantly reiterated symptoms on deaf ears, leads the patient to the indulgence in hyperbole in the description of his symptoms. He is likely to use superlatives to make the situation more impressive. Lest he forget the various angles of his complaint he often records them in minutest detail, and reads them off from his little piece of paper one by one.

The picture of the neurasthenic, however, is not as doleful and dismal as one would think, and many find their escape through the safety valve of genius and talent, so that their helter-skelter psychic processes become uni-directional, and lead to some of the sublimest efforts of humanity. The victim of a neurosis is frequently a playwright, a poet, an actor, a musician or an artist, who is much to be envied. To many, the example of such celebrities as Kreisler, Leginska, Shaw or Galli Curci, as compared to the dominant physical types, such as Jack Dempsey, George Washington or the Duke of Wellington, is an inspiring illustration.

The neurotic, unless a victim of his baser emotions, is usually a superior citizen; his habits often exemplary. His fatigability prevents indulgence in the excesses of vice and dissipation, and late hours are not conducive to comfort. His fear of symptoms precludes an indulgence in vices such as drinking, excessive smoking and carousing, and abstinence from their enjoyment may be construed as an evidence not so much of strength as of weakness and effort at self preservation. His meticulousness in detail and routine makes him a conscientious parent, or child, and a faithful employee.

The physician who attempts to treat the neuroses must be primarily a good diagnostician. Neuroses which seem to have localizing symptoms in the cardiovascular or respiratory apparatus can usually be diagnosed with considerable certainty, and with little equivocation. The pres-

ent understanding of cardiac diagnosis and the rather clean-cut clinical picture of angina pectoris, as well as electrocardiographic diagnosis, lead to rather definite opinions as to the presence or absence of organic disease.

The roentgenologic examination is of similar value in the diagnosis of tuberculosis in the phthisiophobe.

In a consideration of the gastro-intestinal complaint, the situation is not so simple. In retrospect, of course, it is easy to view the distressing results of hasty surgery, particularly in the zone of the gallbladder and appendix, and oftentimes with repeated operations for adhesions, ovarian disease, and what-not, which not infrequently only add their increment to the increase of the patient's invalidism. On the other hand, it is equally devastating to one's professional pride if a later examination, usually by some fellow practitioner, uncovers an objective organic condition behind the haze of the functional smoke screen.

The neurotic's treatment must always be prefaced by a most careful and detailed examination, so that in the physician's mind there is no question as to the exactness of his diagnosis. This is the basis for the assurance given the patient of the benignancy of his condition, and unless it can be made emphatic enough, it is likely to leave the patient in still further doubt and fear as to the ultimate possibility. Many patients date an aggravation of their symptoms to the uncertainty or error of a previous diagnosis, or equivocation or hesitancy as to the presence of organic disease. The responsibility of the physician is great, as can be best realized by the subsequent consultant who views the patient's increasing and manifold distress and anguish.

It is difficult sometimes, even for the most experienced and case-hardened campaigner, to differentiate organic from functional conditions. Obviously, all organic disease begins with functional alteration or physiologic perversion, which may or may not be apparent with our present diagnostic limitations. Likewise, many conditions cause symptoms closely resembling a neurosis, particularly hyperthyroidism, incipient tuberculosis, anemia, hypoadrenalism, etc., which require the most careful study. Dr. Plummer

one time said that, in the diagnosis of Graves' disease, it is important primarily to know the thyroid and secondarily to know mankind; otherwise the diagnosis, prognosis and treatment are greatly complicated.

The physician must also have a sympathetic understanding of the patient's temperament and the symptoms he suffers. It is impossible, of course, for every physician to experience a neurosis himself which will serve as fertile soil for its appreciation, but an extensive experience and understanding of humanity and its diversified nervous and mental characteristics is of great value. Riklin states that the treatment of the neuroses should not be attempted by rough and untrained hands, lest he either force the patient into greater despondency or into the hands of the charlatan.

For the simpler neuroses it is not necessary to be a trained psychiatrist. The problems are relatively simple, and a modified type of psychoanalysis will reveal the various influences which wreck the patient's morale. A basic understanding of psychologic processes is quite important. Influences of heredity and environmental factors (sociologic, occupational and marital difficulties), all must be truly evaluated, and the patient must be told not only of the fundamental makeup and disposition which is the basis for his neurosis, but all the environmental factors which operate must be brought into the picture, so that the patient thoroughly understands the mode of production of his symptoms.

Since so many neurotics are well endowed mentally, the physician should, if possible, school himself in the appreciation of a broad culture, in order to establish a basis for a rapport that inspires the patient with a respect for his universal intelligence. All the minutiae of medical art and skill must be brought into play so that no loophole may be left to try the consultant's vulnerability. Every angle of the patient's life must be analyzed and met by suitable approach.

If one once develops a certain tact in ferreting out the various problems the patient encounters, without any semblance of prying or inquisitiveness, a picture often reveals itself which is as fascinating as the elucidation of any diagnosis in objective medicine.

# LIPIODOL INJECTION IN THE DIAGNOSIS OF STERILITY\*

W. A. COVENTRY, M.D., F.A.C.S.

Duluth Clinic  
Duluth, Minnesota

THE introduction of the Rubin's test for inflation of the fallopian tubes in the diagnosis of sterility was undoubtedly one of the greatest advances ever made in gynecological diagnosis. This test paved the way for further advances in the technical diagnosis of sterility in women. Injection of the uterus and fallopian tubes with lipiodol has brought out many new possibilities in gynecological diagnosis. The iodized oil not only tells whether the tubes are patent or not, but also, if they are so, where the obstruction is located.

As an injection material, many preparations have been used by various men. Ott prefers a suspension of charcoal; Cory used collargol; Kennedy, 10 per cent sodium bromid; and Tusson a bismuth preparation. Preparations of iodine, however, have apparently met with the greatest favor. The French brought forth lipiodol, a definite chemical mixture of 30 to 40 per cent iodine and poppy seed oil. The American preparation is iodipin—iodine in combination with other vegetable oils. I have used both of the iodine preparations, but prefer the former as it seems to flow more easily. The lipiodol, as has been pointed out by Forestier and Sicard, is a clear, transparent, yellow, oily fluid; if it becomes brown, it should be discarded, as this indicates the presence of free iodine, which will undoubtedly cause some trouble. I have always used fresh preparations, which have been kept out of the sunlight and in an aluminum container.

There has been considerable discussion in the literature as to whether these iodized oil preparations may cause peritoneal irritation. So far I have found no reports of cases exhibiting untoward results after injection of lipiodol, provided, of course, that the proper judgment was observed in the selection of cases. One writer has very well shown that the oil is relatively soon absorbed by the peritoneum, and that, as far as fluoroscopic evidence is concerned, it entirely disappears. In my own cases I have found no evidence of peritoneal irritation, except in

one case, and in this instance there was undoubtedly a subacute salpingitis present. The patient had moderate pain for twelve hours but no rise in temperature. In one of my cases in which the tubes were found patent, a laparotomy for an acute appendicitis was necessary two weeks after the injection. At the time of operation the patency of the tubes was confirmed; and there were no adhesions and no evidence of peritoneal irritation or oil to be found. One must observe the same care in pre-injection diagnosis, however, as is essential in using the Rubin's inflation method: namely, injection should not be used where there is an acute or subacute salpingitis, or pelvic peritonitis present. If one observes these precautions, I believe the iodized oil may be useful without any fear of bad results.

*Technic.*—The technic as laid down by Jarcho, in my opinion, is rather more rigid than is necessary, but probably one's technic depends

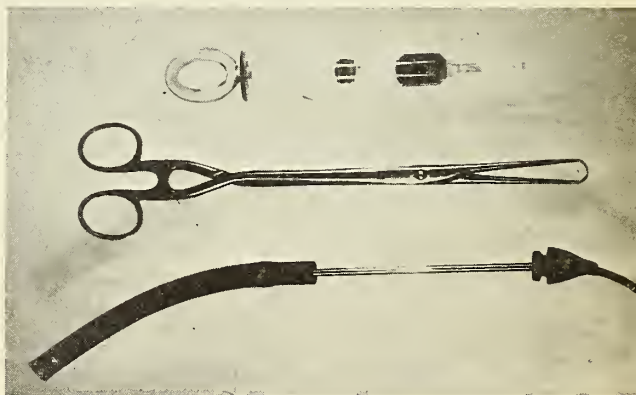


Fig. 1. Diagram of the instruments used.

somewhat upon one's clientele. Some insist that all cases should be hospitalized, but in my practice I have never found this necessary, all patients being taken care of in the office. I have followed this same course when using the Rubin's test, and in several hundred selected cases I have not yet found cause for regret. The patient is put in the lithotomy position. A tray containing sterile bivalve speculum, bullet forceps, glass syringe, a rubber tip, post-urethral cannula with perforations on the side and a rather stiff rubber

\*Read before the annual meeting of the Western Surgical Association, Omaha, Nebraska, Dec. 8, 1927.



Fig. 2. Mrs. O. D. P., age 26 years, married 7 years, 1 child 5 years of age. Comes in because of sterility. Bimanual examination negative. Lipiodol injection shows both tubes to be patent.



Fig. 3. Mrs. L. R. W., age 28 years, married 6 years, 1 child 3 years of age. Endocervicitis. Lipiodol injection shows patent tubes and lipiodol dripping from the tubes.



Fig. 4. Mrs. V. M., 34 years of age, married 7 years, husband has lues. Lipiodol injection indicates perfectly normal tubes.



Fig. 5. Mrs. H. F., age 27 years, married 5 years. Lues and epilepsy. Lipiodol injection shows both tubes open and spilling of lipiodol in pelvis.

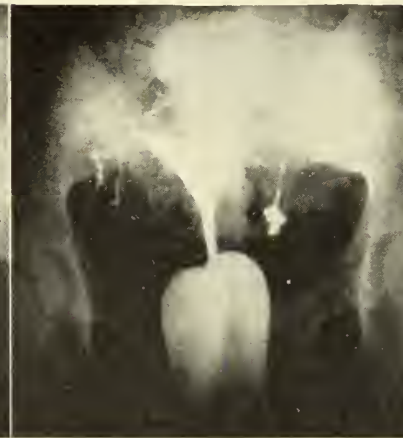


Fig. 6. Mrs. F. R. C., age 28 years, married 6 years, 1 child 3 years of age. Seen by me postpartum, at which time patient was running a temperature and showing evidences of a right salpingitis. Complains of sterility. Lipiodol injection shows both tubes open. This case brings out interesting point in diagnosis which the lipiodol injection clears.



Fig. 7. Miss N. N., age 25 years, single. Admits Neisserian infection 3 years ago. Tubes inflated to determine whether open or not. Both tubes patent. Note lipiodol coming out at the end of the tubes.

tube about four to six inches long on the other end, are the only instruments necessary. First, introduce the bivalve speculum; slowly grasp the anterior lip of the cervix with volsella forceps; insert the cannula up to the rubber flange and then inject the oil. There are a few "tips" which might be mentioned:

1. If one slowly grasps the anterior lip of the cervix without noise, the patient will experience little or no pain, probably because of the absence of psychic influence.

2. The rubber flange on the cannula should be firm enough and yet loose enough that it may be adjusted back and forth on the cannula so as

to form a rather firm plug when pressed against the cervix.

3. A rubber tubing of stiff quality attached to the other end of the cannula will greatly help the assistant to adjust the syringe and inject the oil, as well as prevent leakage.

4. The lipiodol flows easier if it is warmed immediately before using. Undue pressure should not be used at any time in injecting the oil, unless it happens to be a case where this is indicated. As a matter of fact, with the glass syringe described it is impossible to get too much pressure.

5. The patient may experience slight pain



Fig. 8. Mrs. C. H. W., age 25 years, married 2 years. Complaints of sterility. Uterus small and in normal position. Adnexa apparently normal, but bimanual manipulation causes pain. Lipiodol injection shows both tubes apparently closed.



Fig. 9. Mrs. D. J. H., age 29 years, married 1½ years; menstruation always irregular with a tendency to run-over (sometimes as long as 3 months, even before marriage). Complaints of sterility. Lipiodol injection reveals a defect in the uterine outline, either a myoma or a pregnancy. Right tube is not filled but the left tube fills easily. Further examination reveals this to be a pregnancy. No bad results from the injection; expected delivery January, 1928.



Fig. 10. Mrs. C. L., age 38 years, married 12 years. Complaints of sterility. Lipiodol injection reveals a peculiar shadow which makes one very suspicious of a bicornate uterus. However, not able to fully substantiate this diagnosis. Both tubes are open. Question is, is this a large uterus or a bicornate uterus. Unable to determine bimanually.



Fig. 11. Mrs. N. J. S., age 34 years, 1 child 6 years of age. Complaints of sterility. Lipiodol injection on April 14, 1927, shows the tubes open. Patient menstruated on July 31, 1927. She is now pregnant. This is one of several cases which have become pregnant the month following injection of lipiodol. This phenomenon has also been noted in doing the Rubin's inflation test.

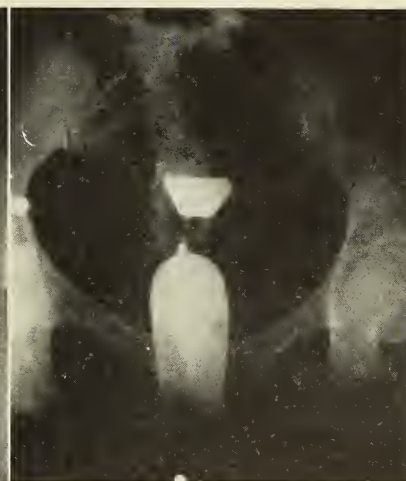


Fig. 12. Mrs. E. G., age 27 years, 1 child 3 years of age. Pelvic infection 2 years ago with mass felt in left adnexa. Complaints of sterility. Lipiodol injection shows the tubes closed.



Fig. 13. Mrs. H. M. K., age 31 years, married 4 years. Complaints of sterility. Lipiodol injection to determine patency of tubes and to demonstrate the effect on tubes as result of Baldy-Webster operation. Picture shows tubes to be open, but hair-like filling of proximal portion with apparent spasm of right tube.

when the body of the uterus is filled with oil, but if one will rest about half a minute the pain disappears, and then one may proceed with the filling. The pain is undoubtedly due to a slight cramping of the muscles of the uterus, and with relaxation the oil flows out through the tubes freely. This was pointed out by Randall in his article.

6. The use of the Potter-Bucky diaphragm

will give better pictures, but good ones can be obtained by the use of a lead plate under the film.

7. Fifteen to 20 c.c. of the iodized oil is the usual amount injected. Randall uses 10 c.c. in the ordinary case, while Jarcho uses 15 c.c. As no local symptoms are present from an overflow, I have found that 20 c.c. is about the average amount.

Interpretation of the contrast picture obtained



Fig. 14. Mrs. A. S., age 18 years, married 10 months. History very suggestive of venereal infection 9 months ago. First lipiodol injection shows tubes closed—not much pressure used on injection. See Fig. 15, second picture shows both tubes patent.



Fig. 15.

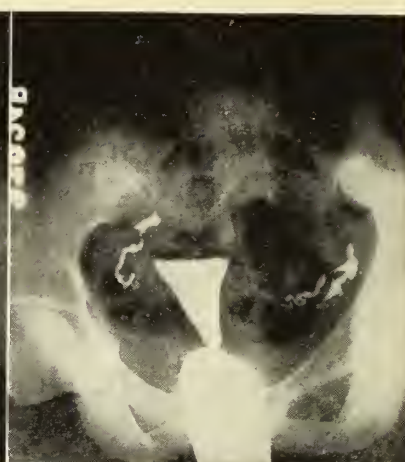


Fig. 16. Mrs. R. H. E., age 32 years, married 7 years, 2 children 5 and 3 years, respectively. Bimanual examination reveals what appears to be a small fibroid in the upper fornix of the uterus. Lipiodol injection reveals a deformity in this area.



Fig. 17. Mrs. E. A., age 23 years, married 18 months. Complains of sterility. First injection unsatisfactory. See Fig. 18, second injection, using considerable force, with sudden pain as if something had let loose, gives a picture which shows one tube open and the other one closed. No reaction after the injection.



Fig. 18.



Fig. 19. Mrs. O. E. S., age 25 years. Complains of sterility. Picture shows no uterine filling but lipiodol in vault of vagina. Imperfect technic.

requires considerable study. Tumors causing distortion of the interior of the uterus, as submucous myomas, or an early pregnancy may distort the uterine filling. Also, the size and position of the uterus may distort the shadow to some extent. A bicornate uterus may be demonstrated by this method. The point of occlusion of the fallopian tubes is more easily shown in view of the fact that one can tell whether the occlusion is in the proximal or distal portion, or involving the fimbrium. The site of obstruction, of course, indicates whether a plastic operation on the tube will be of benefit or not; those in

the fimbriated end offer more hope than those in the proximal portion. Another difficulty in interpretation of the picture is to determine the calibre of the fallopian tubes, since often there is only a small hair line from the uterus to the fimbriated end. May not this be the type of tube that is often found at operation? It is very hard and firm, and the patient has little likelihood of becoming pregnant, even if the tube is patulous.

Peristalsis in the tube has been observed by Rubin and Bendick, but of what diagnostic value this may be as regards sterility remains to be seen.

Unfortunately, the use of lipiodol alone does not in any way outline other pelvic tumors. Stern and Arens, using the combination of lipiodol and trans-peritoneal insufflation, have offered greater possibilities in a more accurate diagnosis of pelvic conditions.

Pregnancy subsequent to injection of the tubes has been observed in a number of cases. This same phenomenon, however, has been noted after the inflation method of Rubin.

The contrast pictures, also, are of value in checking up on the history, as when the patient admits a previous pelvic operation but is unaware of exactly what was done at time of operation relative to surgery on the tubes.

The pictures presented bring out various facts, from which one may draw the following conclusions:

Lipiodol injection of the uterus and tubes is of infinite value in the diagnosis of patency of the tubes and the presence of submucous tumors of the uterus.

Early pregnancy may, with the careful injection of lipiodol, be demonstrated. This method should not be used universally but only when definite indications for differential diagnosis are present.

The injection of lipiodol should be a valuable aid in the diagnosis of congenital deformity of the uterus.

This method is of distinct value in locating the site of obstruction in the fallopian tubes and indicating the possibilities of correction and treatment as regards sterility.

As a means of diagnosis this method may prove even superior to Rubin's inflation method because it not only shows the patency of the tubes but also reveals the pathological status if one is present.

Lipiodol injection is of great benefit in de-

termining the solution of problems which are presented when the patient says: "I have had a pelvic operation, but I do not know what for or what has been removed." She returns to you to



Fig. 20. Mrs. E. R., age 28 years, 1 child 6 years of age. Comes because of sterility. Note deformities of tube; are they spasm or "blow-outs" in the tubal wall?

find out whether she can become pregnant.

Lipiodol is not only a diagnostic aid in determining the patency of the tubes, but also of other allied pelvic conditions.

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## THE ONWARD MARCH OF MEDICINE\*

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*Monticello, Minnesota*

"And step by step, since time began,  
I see the steady gain of man."

Whittier—The Chapel of the Hermit.

"Progress, man's distinctive mark alone,  
Not God's, and not the beasts: God is, they are;  
Man partly is and wholly hopes to be."

R. Browning—A Death in the Desert.

IT is always and everywhere a great honor in the life of any person to have been chosen by his own confrères and peers to assume the leadership for a set period and be the titular head of the society or organization that represents his special profession or occupation in life. But when such honor for a second time is bestowed upon an individual, under different circumstances and in another locality, every normal minded being must feel grateful beyond words that good will, recognition and a fraternal spirit still prevail. And so I have the rare privilege as well as pleasure of addressing myself for the second time during a career of more than twenty-five years of unbroken medical membership to a group of my colleagues banded together in the interest of our profession in this society. In 1910 when I was president of the Seventh District Medical Society of South Dakota I was a resident of and practiced my profession at Sioux Falls, South Dakota, and quite naturally my presidential address of that year had the colorings of a city practitioner. Now, some eighteen years later, I find myself for the last ten or eleven years a resident of the great state of Minnesota and a practitioner of medicine in a rural community; thus I have been afforded an opportunity to personally observe and to learn the differences in the life of both a city and rural medical man. Under these widely different circumstances, personally observed and experienced, I propose tonight to submit my private opinions about the life of a country practitioner, and inasmuch as all of our members share in the same fate of practicing their profession in villages and country districts I cherish the hope

that my remarks may prove both timely and correct. It appears to be quite the thing for officers of medical societies in the cities and even for a president of the American Medical Association to write articles upon or to offer some gratuitous advice about the deplorable medical conditions found to exist in many rural communities all over our great land and the alleged crying need for medical service. The solutions offered for remedying this condition do not hit the nail on the head, and hence I deem it expedient and in the best interests of the thus afflicted rural communities that some concrete facts be assembled and on behalf of the country practitioners themselves be presented both to our public and the above referred to misinformed advisors within our own profession.

Before I do so, however, I beg your indulgence long enough to review the almost incredibly rapid advances made in the science of medicine since my last presidential address or during the last eighteen years; it must of necessity be a hurried sketch because a detailed description of the many improvements in diagnosis and therapy made during these eighteen years would completely transcend any reasonable limitation of the scope of my address.

To begin with let me remind you of the discovery of radium and its introduction into our medical armamentarium as a valuable remedy in malignancy of whatever nature. When our early expectations of prompt and complete relief did not always take place, additional experimental studies in roentgenology brought forth the use of deep x-rays produced by large machines of immense voltage. Such an equipment runs into thousands of dollars; hence is not readily available to country doctors; in fact, is found only in the metropolitan cities and there only in the large hospitals. On the other hand, due to our wonderfully improved transportation system by rail and air, radium can be rented and shipped anywhere.

An outstanding discovery both in physiology and therapy was made a few years ago by Dr. Banting of Toronto, Canada, when he was able

\*President's address to the members of Wright County Medical Society at its meeting, October 18, 1928, Buffalo, Minnesota.

to isolate the active principle secreted by the islands of Langerhans of the pancreas and thus give to the world a powerful remedy, insulin, for the control and treatment of diabetes mellitus.

Again and as recently as 1926, we were profoundly happy to learn of the work of Drs. Minot and Murphy of Harvard University upon the beneficial effects in pernicious anemia of a diet rich in liver. As a result of further studies they have succeeded in isolating from livers the active principle in extract form, fully as efficacious as raw liver. The scientific concentrated studies on the two largest glands in our body, so happy in results, brings to my mind the further fact that organotherapy as a most efficient means of treating many pathological conditions, and endocrinology as an important branch of a well rounded out medical curriculum, have become fully established during these same years.

Still further inroads in our battle against disease were made by the Norwegian doctor, K. E. Birkhaug, who, in 1927, succeeded in producing an antitoxic serum for intramuscular treatment of erysipelas, and by the Austrian physician, Professor Wagner Jauregg, who by his malaria treatment of general paresis has given to this large group of sufferers a most encouraging ray of hope.

Side by side with these real advances I deem it appropriate to also emphasize the greater exactness in our diagnostic work, secured by such means as a reliable blood pressure apparatus, tests for basal metabolism and alkalinity, blood chemistry, and in the special branches of medicine, to-wit, ophthalmology and urology respectively, by a good tonometer and likewise a good cystoscope. These tests and examinations, added to the many others already fully accepted and practiced, have led the doctors in even smaller cities to combine into groups in which the maintenance of a good laboratory and the employment of a competent technician has become a self-evident necessity in order that the patients of any such group shall be impressively imbued with the superiority of the city consultant over the family consultant in the country or village. And the picture is not yet complete; indeed, during the last seven or eight years a wonderful revival of physiotherapy has taken place, no doubt in a great measure helped along by the missionary representatives of electrical manufacturing houses, and as a result of their

successful selling campaign we find the doctors' offices filled with complex machinery, all of which are operated by some form of electric energy, whether it be an  $x$ -ray machine, diathermy apparatus, ultra-violet and infra-red lamps, sinusoidal, faradic or galvanic apparatuses. To the doctor who fully understands the *modus operandi* of his electrical equipment and knows its limitations as well as indications there can be no question about its value, therapeutically speaking; but the doctor who does not possess this requisite knowledge and nevertheless parted with his money for the installation of this variegated machinery when in a trance under the influence of said representative will awaken to his sorrow and to the realization that over and above all machinery invented by human mind, yes, over and above all  $x$ -rays, ultra-violet rays and infra-red rays we shall still demand a goodly amount of brain rays clustered together in a focus of knowledge. Again we find our city colleagues having the better of the argument because many hospitals in the cities now have a separate physiotherapy department supervised and managed by a fully competent and trained medical man; hence no necessity exists for the city practitioner to invest money in physiotherapy equipment.

A review of the past eighteen years and their significance to every practitioner of medicine wherever located would not be complete if it were confined solely to medical improvements in diagnosis and therapy; these same years stand out in the pages of history as transcending any other similar period since the dawn of man, not only in social relationships, but also culturally, politically and in the field of transportation; besides we have experienced and lived through the greatest war in all history, the world combat of 1914 to 1918.

What Ibsen in one of his dramas faintly alluded to and described as music in the air has become a reality since the invention of the radio, and what a blessing and gift to humanity and to all country dwellers in particular; by a mere twist of the dial the most lonely frontier family can enjoy the most exquisite operas or symphony concerts, heretofore only available to the inhabitants of our largest cities; or said family may listen to lectures on educational subjects or health and agricultural matters, in brief, whatever may be of interest to the listener, who by means of the radio, irrespective of distance, is

brought back to communion with humanity at large and its pulsating life. Now we may truthfully say that distances as regards sound waves have been reduced ad infinitum by wireless telegraphy and radio. The various races and peoples of this planet are being gradually drawn together into one large family. The brotherhood of man has ceased to be a perfunctory utterance from the pulpits, but has been promoted by radio, wireless telegraphy, and lastly, but not the least, by airships and dirigibles; indeed, travel by air is getting to be quite common, and the next ten years will undoubtedly witness such steady increase in flying and such preference for travel by air that emergency calls to doctors will be responded to in airships. What the automobile has done in reducing distances by land and as a result thereof a decline in merchant establishments in smaller towns with attendant smaller stocks to choose from, will be felt many times more when the airship has been further developed in perfection and safety. Not only the country merchants but the country doctors, save those who are truly on a parity with their city colleagues in skill, diagnostic acumen and knowledge, will suffer. When that day shall have come, and in my humble opinion it is not very far away, I certainly shall sympathize with those country doctors who have been content in the past to serve as nurses to their clients or as middlemen for hospitals in all localities, cities or villages, other than in their own town; for such men the future stability of a medical practice in rural communities does not look at all promising.

It still remains for me to point out some extraordinary changes in our professional, political and social life, such as the enactment by Congress in 1912 of the Harrison law and in 1919 of the National prohibition law, operative since January, 1920. I have no knowledge of any other country where the license issued to a doctor of medicine for practicing his profession has been later on curtailed by legislative enactments and the issuance of sublicenses became necessary as in our country in its efforts to regulate narcotics and liquors. Besides subjecting the doctors to a lot of governmental rules and time-robbing inspections the less we say about these fruitless efforts the better. Suffice it to say that from a moral viewpoint our people are getting deeper and deeper into the mire while utter disregard for laws in general is spreading amongst

young and old alike. Since the termination of the world war we have heard and read a great deal more about birth control, and it appears that regardless of opposition from certain church organizations this subject must be given serious consideration because of present economic conditions. Everywhere in the world the human fabric is breaking down as a result of the financial misery experienced since the world war. To further ease the hungry masses with something more tangible than birth control Soviet Russia has gone the full length of the road and indeed cut loose from all restraining church influences when it promulgated a law as early as 1917 and later (in 1920) made more specific about legalizing abortion which upon proper showing is performed gratuitously in all hospitals owned and operated by the Soviet republics of Russia. Pondering upon these sociological conditions and viewing them in a broader sense one can not help but be reminded of and believe in the revival of the old Roman cry for "Panem et Circenses"; the rights of humanity have been asserted amongst all races and under all climes; no one fancies a reduction to financial slavery by reason of supporting a large family, not even for the glory of God as used to be said. While the doctor both in the country and in the city is beset with requests for birth control and abortion (in our country still unlawful) we do at times encounter other requests indicative of the urge to live and to enjoy; I refer to rejuvenation in both men and women. As a result of insistent demands upon the medical profession for giving lustre to these old, burnt-out lamps we have learned of various surgical procedures aimed at restoring potency to these human victims of pre-senility. Steinach of Vienna, a professor of physiology, was, I believe, the first doctor to take up this hopeless battle against nature by advocating a surgical procedure which consists in cutting through the excretory ducts of the sexual glands, and later a Russian doctor, Voronoff, has proposed another method, to wit, transplanting the thyroid glands. I do not care to go into details about either method because I most heartily agree with professor Tandler of Vienna that rejuvenation operations represent nothing but financial operations and hence are objectionable to every honest self-respecting medical man.

Such then is the composite picture that I feel you must contemplate and analyze with a critical

mind before you can submit a positive and intelligent answer to the question of what the future holds in its lap for country practitioners; and when you have carefully weighed the many changes enumerated by me I trust you will have no difficulty in reaching a convincing conclusion along the lines that I shall now present. To begin with let us start out with premises that are agreed to everywhere. The farmers of our country constitute the nation's backbone, and agriculture occupies a position as the largest basic industry in our republic. It is equally axiomatic that doctors wherever located receive the bulk of their income from patients generally spoken of as belonging to the middle class of our social strata, and certainly when normal prosperity prevails in the agricultural industry our farmers constitute a most admirable clientele for a doctor. In spite of these facts readily agreed to, it is reported that a large number of rural communities all over this country are at present deprived of steady medical service because the doctors are flocking to the cities. And why? Simply because it requires a goodly sum of money to set up and maintain a doctor's office in a rural community if the follower of the arts and sciences of medicine with the present day requirements to accurate diagnosis shall be successful in overcoming the competition of his city colleagues. The efforts to solve this dilemma by presenting the rural communities with graduates in medicine of an inferior training are hopelessly misdirected and an insult to the intelligence of our farmers. This will be realized when we but remember how distances are constantly being diminished by automobiles and airships, making it possible for any one not satisfied or convinced that his rural consultant possesses all the knowledge and equipment that will vouchsafe him the best possible treatment, to leave his home doctor and in a few hours present himself at a clinic or hospital in one of the neighboring cities, where it is presumed that he will receive the benefits of said requirements. Here then is the crux of the whole situation, namely, the ease and rapidity with which sick folks from the country can travel and become beneficiaries of well manned and equipped clinics and hospitals in the cities. The ease with which young doctors can open an office in the city with a minimum of money outlay and necessary equipment simply aggravates the situation. To counteract this condition as at pres-

ent developed and to draw a sufficient number of competent graduates in medicine to locations in the country, all that is necessary is to provide working facilities in the country similar to those now found in the cities; a rather simple solution of the whole problem. Let us remember, however, that if hospitals are good for city doctors and city people they are equally good for country doctors and country people. City people through various church organizations or civic groups have seen to it that the paramount Christian duty in a civilized country is complied with through the operation and maintenance of a sincerely good Samaritan spirit displayed in institutions we call hospitals. To do likewise in the country resolves itself into a financial question, pure and simple. If our farmers desire to maintain medical service in their respective communities they must be willing to furnish working facilities that will attract medical men or else the consequences will be as already complained of, either no doctor at all or at best one that functions as a nurse. Happily in our state the groundwork has already been attended to by our legislature when in 1913 it enacted into law, chapter 392, authority for the commissioners of a county to build, operate and maintain a county hospital, provided the people of the county at an announced election decided in favor of such expenditures. Besides securing these benefits to the whole county from public funds I shall not fail to emphasize that smaller communities can do equally well by fostering a community spirit that will grow strong enough to take concrete form in the shape of a community hospital of which every resident is a stockholder and partner. Given the stability of a hospital in a county either through public funds or private funds raised amongst the residents of a particular community within a county, I venture to say that any such county and community will never lack competent medical service. The individual representatives of our profession in any such county and community may from time to time vary somewhat in minor degrees, but broadly speaking and as a general run they will measure up favorably with the best of city physicians because through their hospital association and work they receive daily a stimulus to render the best possible service to their fellow men. I feel safe in predicting that any well trained medical man, located in the country, with modern medical equipment

available, will continue to enjoy his work in the country, and will take care to evidence that he has grasped the full meaning of Mr. Lowell's words, that:

"New occasions teach new duties,  
Time makes ancient good uncouth,  
They must upward still and onward,  
Who would keep abreast of truth."

Such a practitioner of medicine need fear nothing of the future, regardless of where located.

And now in closing my review and my remarks may I also be permitted to say that I am profoundly grateful for the interest shown by the members of our society in our meetings, which have been well attended even when the weather and road conditions have been far from good. The object of our coming together at regular intervals is not solely for reviews of medical subject matter, but much more for a conscious purpose of learning to know each other better and by continuation of such association to create a truly fraternal spirit which will induce us to work together in harmony for the glory of our profession and with a single eye to rendering our very best service to our patients; for, be it said, only by such conduct can we retain and enhance

the influence in our respective communities to which a united medical profession is justly entitled; besides each individual member of our organization will prosper because his attainments are recognized by his profession, and his work is spoken well of by the laity. Any country doctor who possesses both the training and equipment herein referred to, and who in addition thereto has so governed his life that he enjoys the good will of both his colleagues in the profession and of his patients in his community can well feel content with a life of usefulness in the country and may very fittingly say with Charles Guthrie:

"I live to hail that season by gifted ones foretold,  
When men shall live by reason and not alone for gold,  
When man to man united and every wrong thing righted,  
The whole world shall be lighted as Eden was of old.  
I live for those who love me, for those who know me true,  
For the Heaven which smiles above me and awaits my spirit, too;  
For the cause that lacks assistance, for the wrong that needs resistance,  
For the future in the distance, and the good that I can do."

#### THE PRECURSOR OF VITAMIN D: ERGOSTEROL

Following the discovery that foods may be made antirachitic by irradiation with ultraviolet light, it was shown that the substance which is activated by the rays is ergosterol. A precursor to vitamin D had thus become established. Activated ergosterol was shown to be a hundred thousand times as effective from the standpoint of its effects on rachitic animals, as cod liver oil. This irradiated ergosterol needs careful standardization and evaluation in terms of curative potency, because an excessive dose may cause "hypermineralization" in the blood in the normal as well as the rachitic infant. The usual dose in infants for cure thus far has been given in the form of oil solutions containing the equivalent of from 2.5 to 5 mg. of irradiated ergosterol. Evidence has been presented which strengthens the assumption that only a molecular structure such as that possessed by ergosterol enables a sterol to be photochemically converted into vitamin D, and confirms the view that ergosterol is the specific parent substance of vitamin D. Fortunately, there need be no limitations to its availability for therapeutic use if this is finally established on a sound basis. (Jour. A. M. A., October 13, 1928, p. 1110.)

#### ALFRED ERNEST GEORGE HALL

Another notorious example of the quack psychologist of the quasi-medical type and who bids fair to rival the redoubtable Orlando Edgar Miller is that of Alfred Ernest George Hall. Although he claims to hold degrees from several institutions, including the University of London, he is not an M.D.; he has never been graduated by any reputable medical school, nor has he ever been licensed to practice medicine in the United States or Canada. He poses as holding important offices in various organizations, some of which, it is opined, have no existence. He has a long record of quackish activity, claiming to be a specialist of London, Paris, Geneva and Vienna and giving discourses on sex subjects. His latest venture was the establishment of an "annual summer school" of the American Academy of Psychological Research at Richmond, Ind., where he delivered unscientific lectures on sexual subjects. This organization is one that has been brought into existence by a motley group of faddists, fakers or quacks and shows the close relationship between the quack psychology scheme, and various physicians and chiropractors, Abrams and Koch disciples and other individuals. (Jour. A. M. A., October 13, 1928, p. 1125.)

# AN UNUSUAL TYPE OF LYMPHOCYTE REACTION\*

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*Saint Paul*

MUCH of the apparently new and curious in the field of disease resolves itself upon careful study into the already known, and unusual interpretations of medical data should never be accepted unless they have passed the muster of a sharp, critical analysis. Yet there are times when the pattern of factual evidence does not fit clearly into any well recognized picture, when in fact a forced fitting may result in prognostic or

blood or in the tissue; it is usually supposed that their function is connected in some way with their quantity in the circulation." Experimental studies of lymphatic reaction have, as yet, yielded only meager results. Clinically, a mass of data exists, particularly with respect to lymphocyte response in infection.

Figure 1 illustrates certain types of such reaction. The normal values represented in this

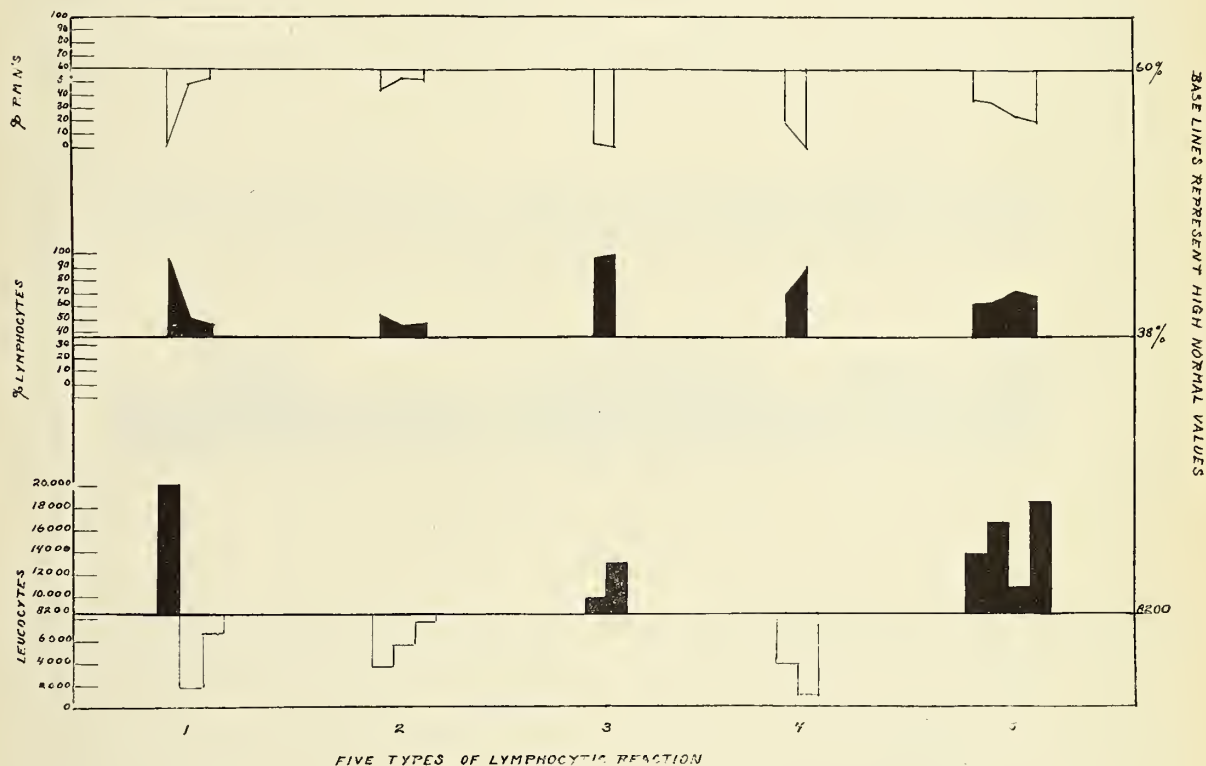


Fig. 1

therapeutic error. Situations of this kind are not rare in the field of hematology, as the cases under discussion in this paper may serve to illustrate.

What, precisely, the rôle of the lymphocyte is, we do not as yet know. Maximow puts the matter succinctly in saying: "There seems to be no secure basis for the discussion of the functions of the lymphocytes. It is not known whether these cells are active in the circulating

and following graphs are based upon biometrical values obtained in 2,500 cases. They are high because they are derived from ambulant patients, not normal people. Increases above normal are shown in black, values below normal in white. Type one represents a relative and absolute lymphocyte response found in a case of infectious mononucleosis. The per cent variation of cells, the change from a leukocytosis to marked leukopenia, all occurred within a period of four to six weeks, the behavior of the blood here showing

\*Read at the meeting of the Southern Minnesota Medical Society, Rochester, Minn., October, 1928.

a striking and maximal variation. Type two is illustrative of relative lymphocytosis as found in influenza. Type three represents the absolute lymphocyte reaction occurring during a case of leukemia in transition from the aleukemic stage. Type four again shows a relative lymphocytosis, induced by the toxic action of roentgen rays in a case of chronic lymphadenosis. The complete disappearance of granulocytes in the presence of a severe leukopenia marks this an example, also, of a granulocytosis on a toxic basis. Type five, finally, represents an absolute and relative

health, except for the knees (which have somewhat improved), is good.

*Case 2.* Man, aged 63. This patient presents himself for routine examination, having no complaints. Past and present history are entirely without incident. Physical examination is negative, x-ray studies of chest negative. All laboratory findings, including blood Wassermann, are negative, except for the blood picture which remains to be discussed.

*Comment.*—This patient has been under observation for six years. Four years ago he had

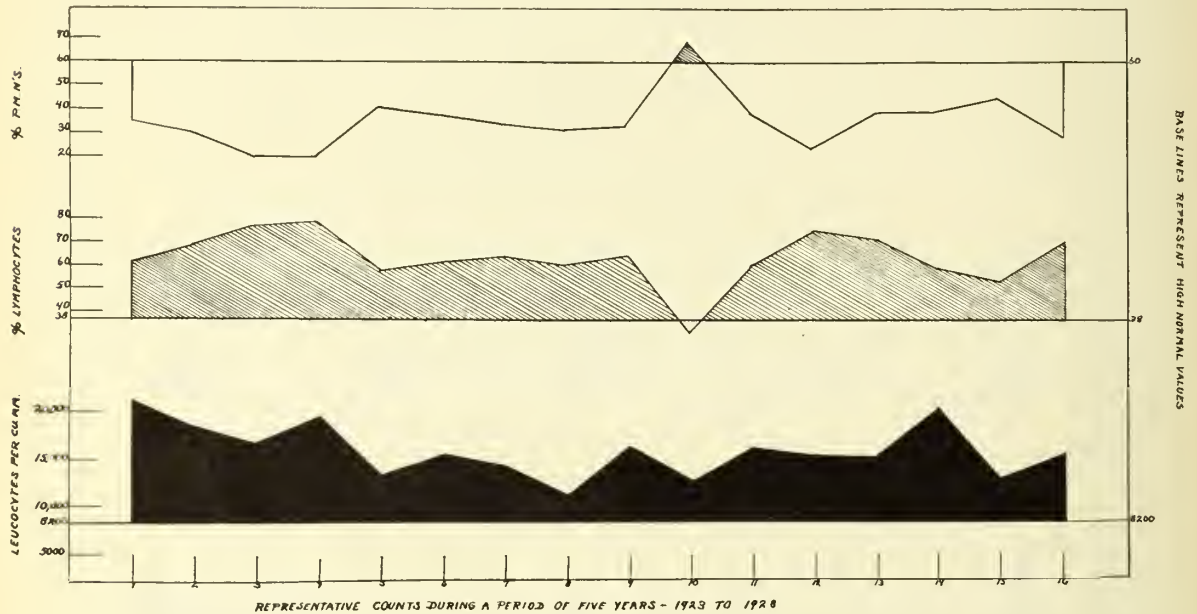


Fig. 2

chronic lymphocytosis, which the cases now to be cited illustrate.

*Case 1.* Widow, aged 73. This woman presents herself for examination because of what later proved to be hypertrophic arthritis of a mild type of both knees. Past and present history are without incident except for the stiffness of the knees, which has come on gradually for the last five or six years. Physical examination is negative; x-ray studies of chest are negative. All laboratory findings, including blood Wassermann, are negative, except for the blood picture.

*Comment.*—This patient has been under observation for five years and during this time has never had adenopathy, a palpable spleen or liver, skin, eye or other changes indicative of a chronic lymphadenosis. Red cells and hemoglobin throughout have been normal. Her state of

an appendectomy; pathological diagnosis—acute suppurative appendicitis. Two years ago he had an excision and cauterization of an early carcinoma of the rectum, 1 cm. in diameter. Recovery occurred without incident. During the last six years there have never appeared clinically demonstrable adenopathy, palpable spleen, skin, eye or other changes indicative of a chronic lymphadenosis. Red cells and hemoglobin throughout have been normal.

The leukocyte count and differential picture in these cases is of marked interest. The next figure shows the type of blood picture present in Case 1 over a period of five years. As in the first graph, base lines in this and the following figure represent normal values. Solid black shows total leukocyte counts; shaded black, percentage of lymphocytes or P.M.N.'s above nor-

mal. Unshaded outlines convey values below normal. The time interval between selected counts may be extensive; thus, between number 15 and 16 a period of over a year intervenes. It will be seen that the total leukocyte count varies between twelve and over twenty thousand, while the lymphocyte percentage ranges between 36 and 78. The last estimation, done within two weeks, still shows high figures. It appears that normal relative values of P.M.N.'s and lymphocytes were present only once and even then the total leukocyte count was above normal. Turn-

find in chronic lymphatic leukemia. Polymorphonuclears, eosinophils and basophils are too numerous for the average case of leukemia.

"My conclusion from a study of this blood is that you are dealing with a case of lymphatic reaction of some kind which is benign and not leukemic." The report on Case 2 is as follows: "I have looked over the three smears of blood which you sent me and fail to find any evidence in favor of leukemia. I could find no immature lymphocytes.

"Besides the lymphocytes the rather numerous

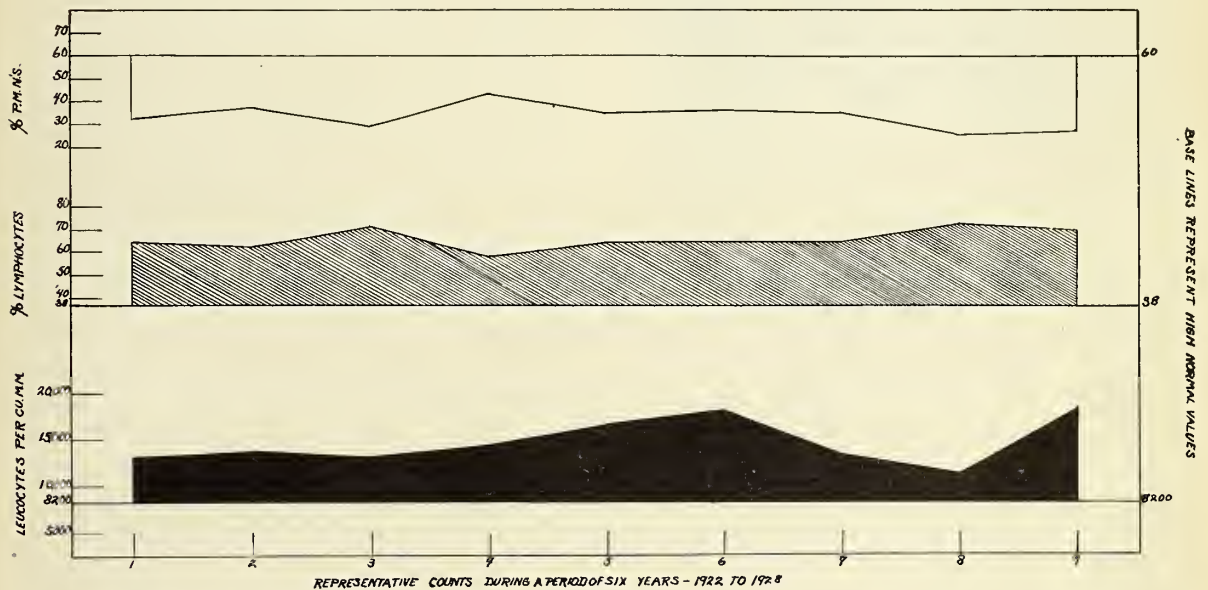


Fig. 3

ing to the next figure one sees precisely the same kind of picture. Here, however, there is never a normal percentage relationship of white cells. The total leukocytes vary from twelve to eighteen thousand and the lymphocyte percentage ranges between 60 and 72. A period of just over a year intervenes between selected counts 8 and 9, the last one having been obtained during the present month.

The blood smears in the two cases present interesting features. Slides were submitted for study to Dr. Hal Downey and his reports read as follows. Referring to Case 1 he says: "I have made a careful study of these blood smears but fail to find any evidence in favor of lymphatic leukemia other than the high percentage of lymphocytes. I could find no immature lymphocytes. There is more variation in the size and types of lymphocytes present than one expects to

'toxic' neutrophils are the most conspicuous feature of this blood. These cells show degenerative features and there is moderate 'shift to the left' in the neutrophil picture due to degeneration rather than immaturity. An Arneth count would not adequately express this feature and so was not done. I found no cells that could be placed in Arneth's class I, but the so-called 'band forms' of Piney can be found without much hunting. The condition of the granules of these cells would seem to indicate that their peculiar nucleus is due to toxic degeneration rather than immaturity.

"I would expect to find some evidence for infection in a patient with a blood picture of this type. The absolute and relative increase in the number of lymphocytes is an unexpected feature in a chronic case. I do not know what to make of it."

Both smears showed some of the degenerated lymphocytes known as Gumprecht bodies, and both some variation in size and type of lymphocytes. There were found in Case 2 also some small lymphocytes practically without cytoplasm

hand, deserves very serious consideration. Naegeli describes a type of this disease in which all physical signs of leukemia are absent, but in which the blood picture is typical. He says that the condition is very rare and, in fact, describes only one case. The duration was six years and death was due to pneumonia and fractured rib. When first seen this patient, a man, had a white count of 16,000 to 20,000, with lymphocytes 75 per cent. Within a short time, however, the count rose to 30,000 and the lymphocyte percentage to 84.

Can the above described cases be fitted into this group? The total count and the lymphocyte percentage in both have remained below Naegeli's figures. The evidence from the blood smears is perhaps equivocal. Gumprecht bodies were found in both, also lymphocytes of various sizes. We know, however, that these phenomena are not peculiar to leukemia, but arise not infrequently in the lymphocytosis of infection or intoxication. The finding of some almost naked nuclear cells and two somewhat immature lymphocytes in Case 2 does lend weight to the leukemic concept in this case, though here again the data are not entirely peculiar to lymphadenosis. Azure granules were found in the lymphocytes of both cases, which one does not so much expect in leukemia. True Rieder cells and very young forms were never found in either case.

Clinically, as we have seen, no evidence exists that can in **any way support** the leukemia concept. This is particularly interesting since one has, of course, been on the watch for any developing signs that might appear. Extraneous examinations such as repeated roentgen ray and fundus investigations have likewise never disclosed any variation from normal. After careful reflection one feels that there is no evidence on hand to place Case 1 in the category of leukemias, while Case 2 can, up to this time, be placed neither in nor out of it.

Thus it seems best, at present, to postulate as a working basis a chronic lymphatic reaction of unknown origin. To close the problem with the label leukemia is, one suspects, neither justifiable nor intelligent. Chronic lymphatic leukemia is a fatal disease, perhaps little influenced in its course even by modern x-ray or radium therapy. Let us be careful, then, how we use the term. Acute mononucleosis has finally parted company with its fatal and very similar companion, acute

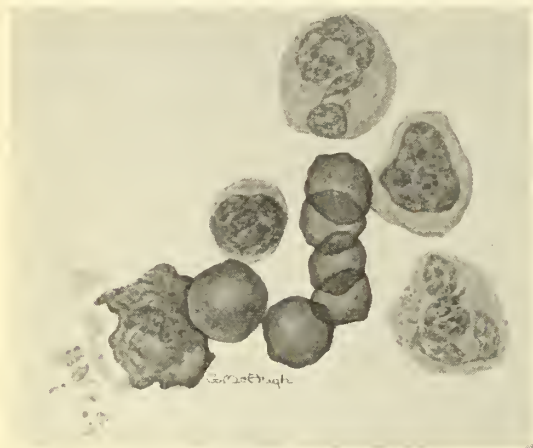


Fig. 4

and since the above report was obtained Dr. Downey says that in Case 2 he has found, after exhaustive search, two lymphocytes that are somewhat immature. He adds, however, that this does not materially alter his point of view as stated above. The next figure shows the type of cell found in both cases.

No basal metabolic studies were carried out in either case. Clinically there has never been evidence of increased rate, the pulse in both averaging about 60 to 65 beats a minute.

Obviously the clinical interpretation of the just cited cases may vary greatly. The problem becomes somewhat more clear upon analysis. For convenience's sake, the next figure illustrates a schematic division of lymphatic reactions. Roughly the sectors below the horizontal line represent conditions in which there exists a leukopenia; those above, conditions in which normal counts or leukocytosis prevail. Clearly the present cases must fall in one of these groups, *i.e.*, pseudoleukemia, leukemia or an indifferent and unexplained class of benign chronic lymphatic reaction.

Pseudoleukemic conditions may, I think, be ruled out, without much difficulty. The course and observed data in the present cases make neither Hodgkin's disease, lues nor tuberculosis a probability.

Chronic lymphatic leukemia, on the other

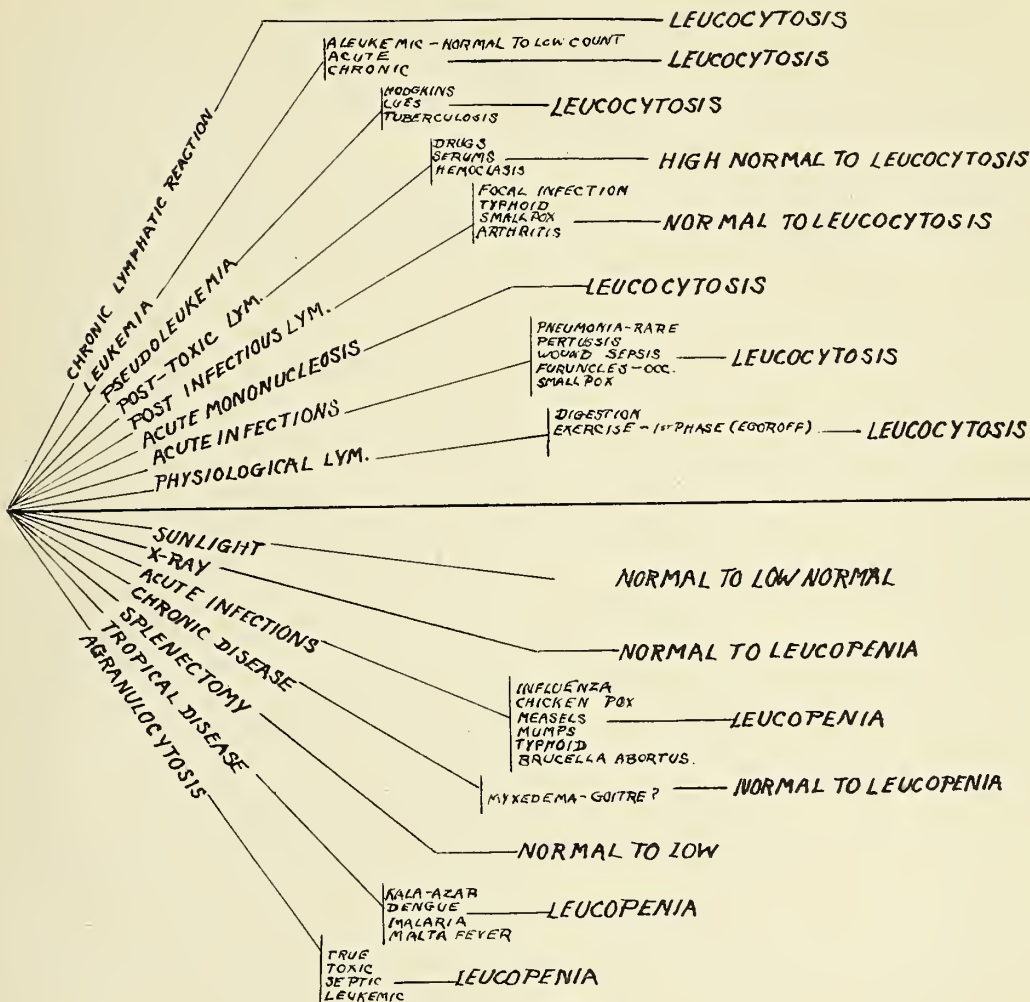


Fig. 5

lymphatic leukemia, and it seems not entirely unreasonable to suppose that one may, occasionally, meet with chronic lymphatic reactions that are, in fact, benign. No such absolute claim is made for the above reported cases. Only further observation and eventual histological section can decide the point, but the possibility seemed interesting enough to warrant recording at the present time.

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#### OVARIAN HORMONES AND OVARIAN ORGANOTHERAPY

The evidence from the experimental laboratories and the clinics, accumulated especially during the last few decades, points to the conclusion that the mammalian ovaries exercise their influence on the so-called secondary sex characters and the sex life of the mammalian female through the mechanism of the hormone or hormones produced by some element in the ovary. It is therefore rational to treat or attempt to treat symptoms due or presumably due to ovarian insufficiency by substitution therapy. Summing up the extensive clinical trials with ovarian preparations, generally administered orally, Novak, in 1924, stated that the results are rarely striking and often nil to the level-headed observer. Much work has been done on the separation and concentration of the so-called follicular ovarian hormone and preparations have been obtained which, when administered parenterally, are reliably reported to stimulate uterine growth and to introduce changes similar to estrus in spayed animals. To date the use of such preparations on patients has been neither extensive nor encouraging. The various ovarian hormone preparations that now seem sufficiently purified to be introduced hypodermically without serious results to the patients should be given trial in definitely uncomplicated ovarian deficiency in order that more may be learned as to their actual effects. (*Jour. A. M. A.*, October 20, 1928, p. 1194.)

#### POWER CANDY MINERALIZED

The Council on Pharmacy and Chemistry reports that Granger Farms, Buskirk, N. Y., requested acceptance for New and Non-official Remedies of Granger Farms Power Candy Mineralized. The candy is claimed to contain one part of tincture of iodine U.S.P. in 5,000; one part in 4,000 of ferrous lactate; 1 per cent of calcium carbonate; 1 per cent of calcium phosphate tribasic; and one-twentieth of 1 per cent of calcium glycerophosphate. The proprietor stated that he is "convinced that with the exception of epidemics and injuries, about 99.44 per cent of the ills that American people are suffering from are due directly or indirectly to the lack of proper mineralization of their foods, and especially the lack of calcium." The Council held Power Candy Mineralized not to come within the scope of New and Non-official Remedies. Because of the unwarranted claims made for it, the use of the product, in the opinion of the Council, is contrary to the public welfare. The candy appeared to be a commercial venture using public health or welfare as sales talk, and in so doing the promoters go beyond the proved facts in (1) claiming that calcium deficiency is almost universal in this country; (2) claiming that such diseases as diabetes and cancer are due to calcium deficient diet; and (3) claiming that mineralized candies are an efficient and safe method of correcting the alleged calcium deficient diet. (*Jour. A. M. A.*, October 27, 1928, p. 1289.)

## POLIOMYELITIS: A GENERAL DISCUSSION\*

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VARIOUS large epidemics and recent discussions of acute anterior poliomyelitis have put this disease in a class with alcohol and religion as subjects for debate and speculation. At present there is a prevalence of polio in our part of the country and for this reason I have chosen it as the subject of a few general remarks without attempting to discuss any one phase of the disease in detail.

### ETIOLOGY

To seek causes for natural phenomena is one of the outstanding traits of human nature. The search for the origin of various diseases is as old as civilization. Many of the riddles have already been solved, but the identity of the so-called "filter-passing virus" still remains a secret. It is now pretty generally believed that acute anterior poliomyelitis is an acute specific fever, caused by a general infection with some filter-passing virus, in which paralysis of various muscle groups is an incidental symptom. While the virus is strongly neurotropic it affects other organs in the body as well as the central nervous system, resulting in splenic and glandular congestion as well as multiple necrotic lesions in the liver. According to Flexner<sup>1</sup> the virus becomes very active when once adapted to the monkey and can be passed from animal to animal without altering its virulence. There is at the Rockefeller Institute a virus that has been passed for twenty years and its activity still is unimpaired. Flexner believes that he has seen the virus in the form of so-called "globoid bodies."

Rosenow<sup>2</sup> states that he has been able to isolate a pleomorphic streptococcus from tissues sent in from widely separated parts of the country. The size and shape of this germ depend upon the conditions under which it is cultured. Under proper cultural variations it has been rendered filterable. According to Rosenow's reports this streptococcus can be isolated from the nasal washings of people ill with poliomyelitis and also from well contacts during an epidemic. When it is injected

into rabbits or guinea pigs, flaccid paralysis with lesions of the central nervous system ensue. Further, the more sensitive strains are agglutinated by serum from convalescent patients. Most investigators agree that the portal of entry for the virus is either the nasal mucosa or the gastrointestinal tract.

However, Pitzman<sup>3</sup> ingeniously evolves the theory that poliomyelitis is in reality atropine poisoning caused by the contamination of milk supplies with atropine as a result of the ingestion of jimson weed by the cows from which the milk is obtained. He states that Flexner's alleged monkey poliomyelitis is in reality a foreign protein reaction and that sterile normal horse serum will produce the same effects as do emulsions containing the so-called filter-passing virus when injected into the brains of monkeys. After regarding the question from all angles I feel that Flexner's ideas are the most nearly correct.

### PATHOLOGY

Whatever the etiology of anterior poliomyelitis may be, the pathological effects of the causative agent upon the central nervous system are very definite and characteristic. The pathological condition divides itself into three stages: those of onset, destruction, and repair. If we bear these stages in mind the clinical phases of the disease will be more easily understood and remembered.

In the stage of onset there is no actual invasion of the central nervous system. The condition is a generalized infection which has as yet failed to localize in any one portion of the body. That the defense mechanisms of the body have already been called into play is evidenced by the leukocytosis in the blood. In this stage the virus may be recovered from the cerebro-spinal fluid.

The stage of destruction begins when the central nervous system is actually invaded by the polio virus. The extent of the pathological process is always greater than can be inferred from the clinical symptoms. The meninges are hyperemic, edematous, and show mild perivascular infiltration with lymphocytes and a few polymorphonuclear leukocytes. Similar cells can be found

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in the meshes of the pia arachnoid. The spinal cord and brain also are hyperemic and edematous and in some places hemorrhagic and necrotic areas may be seen. Microscopically the picture is quite characteristic. *All* of the vessels are involved, showing engorgement and perivascular cuffing. Inasmuch as the gray matter, especially the anterior horns, is so much more richly supplied with blood vessels, the process appears to be localized here. At first there is no actual destruction of nervous parenchyma, but this occurs a little later when distinct evidences of neuronophagia can be found. According to Buzzard and Greenfield<sup>4</sup> the virus has no specific effect upon the nerve cells themselves, but the damage is produced by the inflammatory exudate in which the cells become submerged. Some cells are actually destroyed and the function of others is merely impaired by edema and possibly by chemical influences. This explains why muscles which are completely paralyzed early in the disease may show considerable return of function after the acute stage of the illness has passed. The cells in which the motor impulses to these muscles arise were only temporarily affected.

During the stage of repair, resolution of the inflammatory process takes place with the loss of only a part of the anterior horn cells. In some, necrosis has led to the complete disappearance of the cellular elements, and in others actual cavitation with fluid formation may have taken place. In the chronic stage, the paralyzed muscles themselves show simple atrophy with increase in the fibrous tissue elements and shrinkage of the muscle fibers. Sometimes fatty infiltration may be seen in the muscles.

#### SYMPTOMATOLOGY

Having busied ourselves with chemical, bacteriological, and microscopic considerations, let us see what are the clinical effects of all these influences. What happens to the patient? What are his symptoms at the various stages of the disease?

In the early stages the symptoms are often so mild or so similar to those of other infections, far less serious, that it frequently is impossible to diagnose poliomyelitis in its incipency. The symptoms are like those of any other infection, namely, fever, lassitude, headache, loss of appetite, malaise, and mild gastro-intestinal symptoms,—usually vomiting and constipation. As

yet there are no signs of central nervous system involvement. In the presence of an epidemic of polio, however, two phenomena should always excite suspicion in any patient ill with an acute fever. These are : (1) pain in the spine and in the limbs, and (2) increased pressure and increased cell count in the cerebrospinal fluid. The examination of the cerebrospinal fluid is our most important single diagnostic aid in the early stages of poliomyelitis. As far as I know, there are no contra-indications to lumbar puncture in this disease and, as we shall see later, early diagnosis is of utmost importance if we are to expect any results from our treatment. Adler<sup>5</sup> examined forty-five fluids from forty-four patients in a recent epidemic in southern Minnesota and found the fluid to be usually clear unless the cell count was high. His highest cell count was 266 but I have seen cases in which it went over 1,000. At first these may be mostly polymorphonuclear, but later on lymphocytes predominate. When there is a large number of cells in the fluid it takes on a ground glass appearance. Occasionally one finds a normal cell count and Adler also reports yellowish fluids and pellicle formation such as we formerly associated only with tuberculous meningitis. Curiously enough, the globulin content of the cerebrospinal fluid in polio usually is not high even in the presence of high cell counts. There is some excess but it is not marked. Another aid in the early diagnosis of polio may be found in Rosenow's skin test, but I have not had any experience with it.

In some cases the disease never goes beyond the early stage and the patients recover without any further trouble. These are known as abortive cases. Some think that this form is widespread and that most of us have had it at one time or other and are therefore immune. Because the symptoms are so similar to many other acute infections the diagnosis is missed, and many people possess an acquired immunity without knowing just when and how it was acquired.

However, some cases which appear to be abortive at first are not of this type at all and we must always be alert for what is known as the "dromedary" type of the disease. In this variety the early symptoms subside and the patient remains apparently well for a few days, only later to exhibit signs of definite central nervous system involvement. These signs are quite characteristic and when they appear in the presence

of an epidemic the diagnosis of poliomyelitis becomes much less difficult. In addition to fever, headache, anorexia, and malaise, the patient suffers extreme prostration, much more than can be accounted for by the fever, which seldom rises above 102 degrees F. The child usually is drowsy, has a stiff neck, and, what is more characteristic, a stiff spine. The head can be flexed on the neck, but the neck cannot be flexed on the chest. Further, the child cannot bend over forward while sitting up in bed. Kernig's sign is usually present but as a rule is not very marked. Convulsions may occur, the skin is hyperesthetic and the child evinces a desire to be left alone. Sometimes the pain in the extremities is so severe as to make one think of an acute rheumatic fever. Also there is considerable tenderness on deep pressure, suggesting a myositis. There may be a characteristic coarse tremor when the child moves, and the tendon reflexes usually are exaggerated. I have noted a positive Babinski response in some cases. In addition to these signs of central nervous system involvement, the patient's face has an appearance somewhat suggestive of scarlet fever. It is pinched, flushed, and there is a circumoral and a circumnasal pallor. The throat is injected and the pulse is rapid, out of proportion to the temperature.

As at the end of the early stage, the disease may subside also at this point. It is then known as the non-paralytic type. Luther<sup>6</sup> distinguishes between the abortive, the non-paralytic, which I have just described, and the last or paralytic groups of cases. In this last type any or all of the extremities as well as the trunk muscles may become paralyzed. The paralysis is, of course, of the lower motor neurone or flaccid type. Unlike a peripheral neuritis it comes on rapidly and is in full effect from the start. Decreased or absent tendon reflexes, atrophy, vasomotor paralysis, fibrillary twitchings, and considerable tenderness to pressure form the characteristic picture. When death occurs it usually occurs in this stage and is due to respiratory paralysis resulting from involvement of the medullary centers. This usually occurs within the first four or five days.

Greenfield<sup>7</sup> believes that the infection travels up and down the spinal cord via the central canal and thus does not come in contact with mesoblastic tissue, which is strongly virucidal. In people who die of polio rapidly ascending to

the medulla there is always a healthy, patent central canal.

Still another type of polio, and one that is especially prevalent at present, is the so-called bulbar type. Each one of the first three cases seen in St. Paul this last summer occurred ten days following tonsillectomy. The fourth case occurred fifteen days following tonsillectomy. The criticism and discussion subsequent to these cases resulted for several weeks in the refusal of many men in St. Paul to do this operation. All of these patients had facial palsies of the nuclear type, disturbances of swallowing, and three out of the four terminated fatally. Autopsy on one case seen by Dr. J. S. Gilfillan of St. Paul showed typical nuclear degeneration of the seventh and eleventh cranial nerves, *i.e.*, a polio-encephalitis. Another case seen by my associate, Dr. E. M. Hammes, began with fever and gastro-intestinal symptoms followed by drowsiness, and headache, and terminating with bulbar symptoms which resulted in the death of the patient.

The higher cranial nerves, especially the abducens and the motor trigeminus, may also be involved. Some cases begin in the lower extremities and, like a Landry's ascending paralysis, ascend rapidly, involving the cranial motor centers, resulting fatally.

#### PROGNOSIS

If the paralysis does not ascend to cause respiratory failure, the prognosis *quoad vitam* is good. The chances for medullary involvement are greater when the cervical portion of the cord is affected than when only the lower extremities are paralyzed. The prognosis for complete recovery when once the paralytic stage is arrived at is doubtful. A great prognostic aid in this stage is the electric excitability of the paralyzed muscles. Those muscles still showing some response to faradic stimulation at the end of two or three weeks will, in all probability, have considerable return of function. Those muscles showing a complete reaction of degeneration at the end of the first week will in all probability remain paralyzed. However, even in this event, there may be some return of function after a period of several months.

#### IMMUNITY

Virus diseases in man and in animals usually confer upon their victims a more or less perma-

nent immunity. This immunity is due to the occurrence of virucidal substances in the blood of the recovered individual. For this reason the blood or serum from a recovered patient exerts a destructive action against a reinoculated virus. In the case of polio the serum from a convalescent patient will inactivate, both *in vitro* and *in vivo*, the virus causing the disease. This fact is made use of in the treatment of poliomyelitis. Further, Rosenow has prepared an antistreptococcic poliomyelitic horse serum, the administration of which in some cases seems to have resulted in definite improvement. Concerning the relative merits of Rosenow's serum and human convalescent serum, I will quote the conclusions of Dr. Rex L. Diveley,<sup>8</sup> who had considerable experience at the Kansas City General Hospital during the epidemic of 1925. These are as follows:

1. Human convalescent poliomyelitic serum and antistreptococcic poliomyelitic serum of Rosenow are capable of neutralizing the virus of poliomyelitis. More complete with the human convalescent serum.

2. Monkeys can be immunized against an active virus of poliomyelitis by human convalescent poliomyelitis serum and antistreptococcic poliomyelitic serum of Rosenow. More complete with human convalescent serum. Does not last over a six-month period.

3. Human convalescent serum and antistreptococcic poliomyelitic serum of Rosenow are both highly specific in the treatment of acute infantile paralysis. Human convalescent serum more potent. Better results obtained when serum is given early, although recovery is noted even 48 hours after definite paralysis is evidenced and serum treatment started at that time.

#### TREATMENT

The treatment of anterior poliomyelitis is divided into stages corresponding to the stages of the disease. During the acute stage rest and protection are most to be desired and the routine treatment for all acute infections should be followed. Also, repeated spinal drainages are of the utmost benefit in controlling the cerebrospinal fluid pressure. Equally important is the earliest possible administration of human convalescent poliomyelitic serum. As stated before, this is of no avail unless given in the early stages of the disease and the importance of early diagnosis

thus becomes evident. In preparing and administering the serum I use the method outlined by Bourne.<sup>9</sup> The serum should be that of a patient some weeks convalescent from the disease and, of course, free from syphilis and malaria. Collect 200 c.c. of blood in a sterile flask previously rinsed out with sterile normal saline solution. Allow the clot to separate and then draw off the supernatant serum. Between 75 and 100 c.c. usually can be obtained in this manner. Keep this serum in a cool place in a bottle stoppered with sterile cotton. Fifteen c.c. are given intraspinally and a like amount intravenously daily on two successive days, a spinal drainage being done before each administration.

If convalescent serum cannot be obtained, Rosenow's antistreptococcic poliomyelitic serum may be used intramuscularly in combination with repeated spinal drainages.

In addition to the serum treatment, massive doses of urotropin have been used. Bourne recommends 10 grains every two hours until 24 doses have been given. The urine must be watched for blood and albumin at this time and the urotropin discontinued should any signs of renal damage appear. Urotropin may be given also as a prophylactic to exposed children.

When paralytic symptoms appear, serum treatment is not nearly as effective as in the early stages. During the paralytic stage, the affected limb must be splinted to prevent anomalous positions and contractures. Due to the vasomotor paralysis the paralyzed extremity is cold and lifeless. Therefore, external heat in the form of woolen wrappings, the therapeutic lamp, and hot water bottles should be employed. Absolute rest in bed and freedom from weight bearing should be insisted upon by the attending physician. Sedatives and analgesics may be employed as indicated.

Chatterton<sup>10</sup> states that the acute stage of the disease is not over until the temperature becomes normal and all pain and tenderness disappear from the paralyzed extremities. It is only then that gentle massage and passive motion may be employed. Great caution should be exercised here, as too vigorous handling may destroy what chances a muscle has to recover. If large muscle groups have been involved weight bearing should be deferred for from twelve to eighteen months. The general condition of the child should be kept up to above normal. He should be supernour-

ished, if anemia is present iron must be given and later on in the treatment tonic doses of strychnine may be administered. Unless one has a trained operator, electric currents had better be avoided. Later on, muscle training and braces or splints can be used. From this stage on the problem becomes an orthopedic one, and during the third year of the disease operative measures may be used to correct what residual deformity there is.

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#### IRRADIATION AND THE BLOOD

The enthusiasms that have been aroused by the demonstrable physiologic potency of irradiation with ultraviolet rays generated in various ways call for restraint before they are permitted to promote therapeutic procedures that may presently be discovered to be ill advised. No long ago it was shown that the exposure of dogs to carbon arc radiation may give rise to variable results with respect to the changes in the content of erythrocytes in the blood. Depending on the dosage, increases and decreases were noted. A continuation of this work shows that changes in the plasma volume also may take place. The investigators believe that erythrocytes may actually be destroyed by excessive irradiation with massive exposures. Our uncertain knowledge in regard to the effects of irradiation should serve as a warning against undue ventures that may actually border on quackery, until further explicit knowledge is available. (*Jour. A. M. A.*, October 6, 1928, p. 1038.)

#### UNGUENTUM MAZON

An inquiry was sent to the Belmont Laboratories, Inc., to ascertain whether the composition of Mazon and Mazon Soap and Ointment was secret, and, if not, what were the formulas. The Belmont Laboratories, Inc., replied as follows: "We very much regret our inability to comply with the request contained in your letter dated September 21, with reference to Mazon and Mazon Soap for the reason that the composition of both of these products is secret." It seems hard to believe that there still are pharmaceutical houses that will endeavor to exploit products of secret composition to the medical profession. The physicians who are asked to buy such products should refer the detail men to the paragraph in the Code of Ethics of the American Medical Association which states that . . . it is equally unethical to prescribe or dispense secret medicines or other secret remedial agents, or manufacture or promote their use in any way. (*Jour. A. M. A.*, October 20, 1928, p. 1213.)

## MODERN NEEDS IN THE CONTROL OF TUBERCULOSIS\*

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HISTORY is a valuable subject from which to judge and plan for the future. It records the triumphs and failures of past attempts and points out the reasons for and results of these same triumphs and failures. It seems strange that, though we recognize history's virtue in the respect, nevertheless we have neglected to apply it conscientiously to our everyday problems. We have been slow to learn from the lessons that it teaches us.

When we speak of our modern needs, it is desirable to attempt to justify our assertions from the experience of history. It is wise to ascertain if previous records uphold our convictions. Let us first take the subject of early diagnosis. It has received widespread attention and most of us are acquainted with its unquestionable value and need. However, when we remember that only about 17 per cent of admissions to our tuberculosis sanatoria are early cases, we realize that added emphasis on this subject is required. The value of early detection of disease was recognized by the ancient healers. They realized that with advanced disease came lessened hope for a favorable termination of the disease. Laennec in his writings during the first part of the Nineteenth century stated that both the physician and the public entertained the belief that pulmonary phthisis was curable, above all when the disease was "taken in time" and whilst it was still "in the first degree." He also observed that many cases with pectoriloquy indicating cavitation recovered from their symptoms and live to die of other disease. Laennec felt convinced that with the more general use of the stethoscope we would be impressed with the greater frequency of this phenomenon. Statistics tell us that approximately 80 per cent of early treated cases of pulmonary tuberculosis recover and with increased disease come fewer recoveries. We feel therefore that early detection of tuberculosis is an urgent need and a desirable feature of our sanatorium program.

The subject of sufficient sanatorium care has been a vital problem ever since Brehmer first established such an institution. The problem can be divided into two distinct phrases: (1) sufficient sanatorium care for the patient; and (2) adequate sanatorium care for the community. As we have it today, to increase one means to decrease the other. The longer we keep the individual patient, the fewer beds remain for the community's contribution of tuberculous cases. The high cost of constructing sanatoria and the high cost of relapses in tuberculous persons have produced a situation which demands our wisest judgment. Experience has taught us that a long sanatorium sojourn gives the most effective healing to a tuberculous lesion. The tendency in late years has been to increase the period of bed rest together with an added stay at the sanatorium. This necessitates an increased bed capacity for the reason that under existing conditions we do not have adequate sanatorium facilities for all of our active cases. The outside cases are still numerous.

One of two things or perhaps both must be done. The first consists of an increase in our sanatorium bed capacity to meet the community's demand; the second is a more rapid turnover of our patient population. Both are fraught with difficulties and both must be wisely judged in order best to solve this vital problem.

With a more rapid turnover of patients comes the added necessity of an efficient follow-up scheme. The scheme should function in various ways. It should give us a history of our discharged patients in regard to their response to a new environment. It should give the patient an opportunity to keep under effective medical supervision. It should help to protect the community from the careless and non-coöperative consumptive. Past experience has taught us that a record of our activities and results is essential for the proper evaluation of the worthiness of our efforts. Our follow-up system should dedicate itself to just that thing—that of making known the true results of our efforts.

\*Presented before the Minnesota Sanatorium Association at Mineral Springs Sanatorium, Cannon Falls, Minnesota, Aug. 9, 1928.

To gain the best results from a follow-up scheme it is necessary to supervise the activities of the discharged patient until he is again on a sure footing. Dr. Taylor, in his presidential address, points out to us the experience of the Metropolitan Life Insurance Company Sanatorium, showing that 80 per cent of their patients under supervision were at work seven years after discharge. A survey in New York City of sanatorium ex-patients, unsupervised, showed that 52 per cent had relapsed within a year after leaving the sanatorium. The point to be made is that a follow-up scheme cannot function at its best without a rehabilitation program. The two should be linked together, for one without the other means lack of supervision with all its dire consequences. To be without these two things in our tuberculosis program is like going to sea without a pilot.

As we reflect over the history of tuberculosis we become impressed by the potent rôle played by research work. Its results have served as a nucleus around which our modern program has developed. The clinical and laboratory research work of Laennec, Brehmer, Villemin and Koch have left us with our present enlightenment on the subject of tuberculosis. They were the originators of ideas that gave us a practical method for handling the tuberculosis situation. Laennec with his stethoscope, Brehmer with his sanatorium, Villemin with his proof that the disease was infectious, and Koch with his tubercle bacillus gave us a quadric upon which rests the foundation of our tuberculosis program. We are pleased with these accomplishments, but let us not be lulled into the deteriorating and stupefying sleep of satisfaction. There are still great and potent possibilities on the research side of tuberculosis that need investigation, enlightenment and our ardent support. The invitations of the unknown factor are as numerous, pressing and promising today as they were when Koch discovered the tubercle bacillus. But they can never be answered until we attempt wholeheartedly, sincerely and coöperatively to encourage and develop the research side of this disease. Tuberculosis still kills more people between the ages of nineteen and thirty-five than any other single disease, even though its killing power for all ages has dropped to sixth place. We need re-

search work to aid us in attempting to gain a better understanding of this fact and after gaining it to point to a method for decreasing its ravages. We need a deeper investigation into Todd's work on oxygen, Grant's work on vitamins, Corper's work on carbon dioxide, and we must have a better understanding of the body's immunological reaction to tubercle bacilli invasion. We should know why a normal lung when collapsed favors the development of tuberculosis while a diseased lung when collapsed tends to heal. These are but a few of the many problems that have been started in tuberculosis research work and which need added penetration. The time is ripe for developing a more general interest and support of this phase of tuberculosis.

Our state sanatorium program has been definitely lacking in initiative and support in research work. Let us hope that the future will bring us relief and that we may strive more vigorously and surely toward that goal which will unveil another one of nature's secrets and make life and disease a bit more intelligible. That is the mission of research work. It enlightens us, gives us new knowledge and makes the handling of a problem more scientific and effective. There are great possibilities for a full time research worker for our state tuberculosis sanatoria.

In conclusion, let me briefly summarize our modern needs as they have presented themselves to me:

1. Early diagnosis, in order that we may effect more recoveries, remove more carriers and so justify our existence.
2. Sufficient sanatorium care, which should strike a happy medium between the patient's need and the community's demand.
3. An effective follow-up system which would retain the doctor-patient bond, thereby aiding the discharged patient to adjust himself safely to a new environment.
4. A rehabilitation program to complete in a proper way the work accomplished at the sanatorium.
5. A full-time research worker whose duty should be to penetrate more deeply into our tuberculosis knowledge and to raise before us more possibilities.

## COÖPERATIVE DIAGNOSIS\* (A Radiological Conception)

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DURING the earlier years following Roentgen's discovery, the science and art of roentgenology was on trial, under the critical and not always sympathetic eye of the medical profession. The pioneers who undertook to follow this new specialty were called upon to demonstrate and prove their right to recognition. It may now be said, without danger of serious contradiction, that these men met the test fairly, as only true followers of Æsculapius could meet it. They accepted without question the conditions imposed upon them, one of which was that they must pit their ability to make diagnoses, with only the roentgenogram and fluoroscope to aid them, against that of internist and surgeon, who had the benefit of generations of accumulated experience with all other diagnostic agencies at their command. They were often intentionally kept in ignorance of the case history and physical findings, and when individual errors of omission or commission occurred, not the individual but the method was sometimes held up to ridicule or criticism.

To support this statement, perhaps the writer may be permitted to cite a few personal experiences:

One of our older but more progressive practitioners of medicine once said to me, "Do you think it possible, by means of the  $x$ -ray, to recognize peptic ulcer?" I said, "Yes, doctor, I consider it quite possible." He replied, "Now I know you are talking 'fairy tales.'" My reply, to him, was unscientific and radical and I was henceforth regarded by him as dangerous to the scientific and conservative practice of medicine.

Again, a surgeon was conducting a clinic over a case which I had diagnosed "Early carcinoma of the pylorus." Not finding the lesion, with the stomach exposed to direct palpation, he said to the class, "This shows the dangerous fallacy of depending upon the  $x$ -ray report for a diagnosis of gastro-intestinal disease." Ten years later this case came to autopsy and the stomach was found

involved from pylorus to cardia with "Linitis plastica" and the microscopic diagnosis was "Slow growing carcinoma of the stomach." It is very probable that this lesion had existed for more than the ten year period.

I recall listening to a case report by a prominent gastro-enterologist of Chicago, the case being one in which a mistaken diagnosis had been made. However, to experienced roentgenologists in the audience the correct diagnosis was clearly evident on the films shown in the demonstration. The demonstrator was asked, "Did your roentgenologist express an opinion in this case?" He replied, "We have no roentgenologist and, if we had, we would not accept his opinion."

Happily, these pioneer days of roentgenology have passed and the roentgenologist is accepted today as a necessary evil if not as a valuable adjunct to any group of diagnostic specialists.

This is indeed a "pure" specialty, since its appeal for recognition is directed exclusively to practitioners of medicine. The sole aim of the roentgenologist is to assist the clinician to attain diagnostic accuracy and his existence depends very directly upon his ability to accomplish that purpose. The art of diagnosis has become more complex since the advent of  $x$ -rays; but at the same time it has become more accurately scientific, since a great wealth of objective evidence has been brought into the clinical picture through this agency. Diagnosis remains, as it always has been, the art of assembling all available evidence, both subjective and objective, and deducing therefrom a conclusion or an opinion as to the fundamental and contributing causes of any resulting train of symptoms.

The part which the  $x$ -ray may play in this ensemble of clinical evidence is directly proportionate to the knowledge of pathology, and its peculiar manifestations on film or screen, possessed by the roentgenologist.

Some knowledge of what the clinician has in mind before he refers a case for  $x$ -ray examination would be of assistance to the roentgenologist who wishes to make his reports of the greatest possible value to the clinical man. For example, if he knows that the latter is consider-

\*Read before the Omaha Douglas County Medical Society, Omaha, Nebraska, Sept. 25, 1928.

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ing the possibility of metastatic malignancy, he will specifically state in his report that he finds no evidence of malignant disease, thus showing that he has given special attention to that particular question. Or, let us assume that an abnormal area of dullness has been found over the mediastinum. If the radiologist knows this, he will not be content until he has seen films made at various angles and has fluoroscoped the chest and mediastinum. He may thus detect a lesion which might be overlooked in a routine stereoscopic set of chest films.

There is no more reason why the roentgenologist should be kept in ignorance of the case history or clinical features of the case than there would be for the surgeon or internist to make his physical examination without such information. Even the pathologist who examines tissue under the microscope demands information on certain points before he will render an opinion as to the exact nature of the lesion.

The roentgenologist proceeds most intelligently in his analysis of a film or screen image if he knows certain clinical phases of the case. Let us consider a heart case in which there has been heard a recurrent friction murmur. A knowledge of this fact piques the scientific curiosity of the roentgenologist, and, instead of merely measuring the heart shadow and describing its outline, he studies: (1) the cardio-phrenic angles for evidence of pericardial fluid or adhesions; (2) the cardiac pulsations for retractions of pericardium during systole; or (3) looks for a possible pleuro-pericardial "tug" suggesting adhesions. His report now conveys to the clinician the exact information he is seeking.

In many instances the *x*-ray findings are so obvious and typical that no knowledge of the clinical manifestations of the case is needed either to guide the roentgenologist in his search for evidence or to aid him in the accurate interpretation of his observations. On the other hand, the procedure which he may elect to follow in his examination may depend upon clinical data already in the possession of the referring physician, but of which the radiologist is wholly uninformed. Thus if he knows that occult blood has been found in the feces, he will naturally study the gastro-intestinal tract, especially the stomach and duodenum, first and with the utmost care, whereas if pain is the only essential symptom, he may prefer to rule out the gallbladder

as far as possible before proceeding with his gastro-intestinal investigation. Valuable time may thus be saved, and the patient spared unnecessary delay and expense.

It may be said with some truth that all of these things merely constitute different steps in that which should be a routine examination. But it is an unfortunate human trait to be more cursory, perhaps less thorough, in any routine procedure than in a special one with a specific object in view.

The radiologist has the right to assume that, as a consultant in the case, he has been taken into the full confidence of the clinician and has been told everything of importance which the latter knows about the case. If he is not so informed, he may devote much unnecessary attention and time following up and reporting upon some phase of the case of which the clinician is already thoroughly cognizant, perhaps to the neglect of some other phase, information upon which would be more valuable to the referring physician. Let me cite an example: Recently a patient, aged 55, was sent in for a complete gastro-intestinal and gallbladder study. She had had a previous *x*-ray examination and multiple diverticula of the colon had been found, but this information was withheld from me. I found the gallbladder Graham-positive, and also observed a dense shadow in this region which intrigued and puzzled me. The patient was asked to return for examination on subsequent days to determine the constancy of this shadow. A laxative was given and lateral films were attempted although the patient was quite obese. Eventually a barium meal was given, followed by barium enema, and the mysterious shadow was proven to be a large diverticulum of the colon near the hepatic flexure. If I had been informed that diverticula had been found at some former examination, the cause of the shadow would have been suspected at once and demonstrated without many days of futile study and effort.

In the interpretation of radiographic or screen findings, a knowledge of the duration of symptoms is often important. A good illustration of this is in the differentiation between gastric syphilis and carcinoma. If the disease is known to have existed for a year or more, an unequivocal diagnosis of carcinoma would not be ventured, at least without a negative Wassermann test. Of course it may be well said that this is

the clinician's job, not the roentgenologist's. But if the roentgenologist is on record with a diagnosis of gastric carcinoma, in a case which later proves to be syphilis, the clinician will often be the first to criticize him. And this communication is a plea for coöperation, and an effort to prove that better diagnostic results will accrue if there is a sympathetic understanding of some of the problems which confront the roentgenologist.

In the field of lung diagnosis, this coöperation is no less important than below the diaphragm. Bronchiectasis is not always readily recognized in stereoscopic *x*-ray films, but if the clinician informs the radiologist that symptoms point to that condition, the latter will not be satisfied until he has found ways and means to rule it out or clearly demonstrate bronchiectatic dilatations. The writer is familiar with the argument that if the radiologist knows the history he may attribute undue significance to questionable *x*-ray signs. This same argument might be employed with even greater force against the use of the case history in the interpretation of physical signs, since, in the last analysis, the radiologist must rely upon objective evidence which he is in a position to demonstrate to the inquiring physician.

A recent case was one of actinomycosis of the lung in which the correct diagnosis was not suspected until after rib resection. The ordinary lung abscess, bronchiectasis, etc., were ruled out on the *x*-ray evidence and perhaps the only reason that the diagnosis was not made was that actinomycosis was not thought of. If a differential diagnosis had been submitted by the clinician it would doubtless have included actinomycosis as a possibility. By a process of exclusion the diagnosis might then have been made. As it was, the *x*-ray report merely described the anatomical changes without suggesting a probable cause. In this instance responsibility for the error was equally divided and the illustration is used merely to show the need of team work in the general field of diagnosis.

If the symptoms point to tuberculosis, it is important to know the duration of those symptoms, because if the observations of the roentgenologist are slight or negative, he can rule out tuberculosis with greater assurance if the history is of considerable duration. If the latter is brief,

he will ask for subsequent observations before going on record with a negative diagnosis.

There are certain acute pulmonary infections which closely simulate chronic pulmonary tuberculosis in their roentgenologic manifestations. If the roentgenologist is advised that the onset was sudden, that the duration of the illness has been relatively short, that it has been accompanied by a fluctuating temperature, or that a leukocytosis has prevailed, he will be so on his guard that error may be avoided. His attention will be turned to certain rare types of streptococcic bronchopneumonia, and he may be able to assist the clinician to make a correct diagnosis or to avoid a mistaken prognosis.

F. R., a boy of 13 years, was well until August 24th, when he developed a temperature of 103 degrees. When brought to the hospital on the 26th, physical signs were negative with the exception of a palpable spleen. On September 2nd he was sent to the *x*-ray department with a simple request for an *x*-ray examination of the lungs and the films were studied routinely. A diffuse density through the upper left lung field with localized cone-shaped areas of greater density suggested lobular infiltration. Conclusions were pulmonary tuberculosis.

A subsequent *x*-ray examination, made on September 14th, showed the left lung field practically normal.

The appearance of the left lung field at the first examination resembled that of a chronic tuberculous process. There was no resemblance to an acute tuberculosis, and had it been known to the roentgenologist that the onset was sudden and duration short, he would have avoided this error.

The obvious reply that the clinician, knowing the history, would not accept an *x*-ray diagnosis of tuberculosis is inadequate, since he might have assumed that an acute tuberculosis could produce the changes noted in the *x*-ray films. The final diagnosis was influenzal bronchopneumonia.

It must be borne in mind that, under modern conditions, the roentgenologist sometimes does not see the patient, but is offered only a set of stereoscopic films prepared by a technician. How important it is, then, that he should be supplied by the clinician with significant historical data, clinical history and the clinician's differential diagnosis, as a working foundation for his film deductions.

The writer would like to interject, at this point, a definition of the term "differential diagnosis" and attempt to define his conception of its function. I find, in my experience, that many physicians, and especially those specializing in diagnosis, are most reluctant to go on record with any kind of a tentative diagnostic opinion, until the evidence is all in and appears complete and conclusive. But often the correct diagnosis is made by a process of exclusion, one possibility and then another being ruled out, until but one, the most probable, is left. With the attention concentrated upon this probability, it is usually possible to elicit evidence to conclude the diagnosis by proving its correctness.

The differential diagnosis is simply an enumeration of all of these possibilities, set down in the order of their greater probability. It serves as a means to an end, that end being the ultimate diagnosis, and is in no sense an expression of opinion. It is important that this conception of the differential diagnosis should more generally prevail in the minds of clinicians. Then only can they be induced to start the case upon a sound basis of a working hypothesis.

In many cases, although positive  $x$ -ray evidence may be lacking, negative findings can serve to rule out some of these possibilities. But the roentgenologist should know what possibilities are in the mind of his clinical co-worker, so that he may specifically state in his report that, in his opinion, certain of the aforesaid possibilities may be ruled out. Let us suppose again that the clinician has in mind the possibility of diverticulitis, but he refers the case to the roentgenologist merely for a gastro-intestinal examination. The latter returns a negative report. A doubt at once arises in the mind of the clinician whether the roentgenologist in his examination has devoted sufficient attention to this question of diverticula. But if the roentgenologist, in answer to the specific question, "Are there diverticula present in the gastro-intestinal tract?" had stated, "There is no  $x$ -ray evidence of diverticula," the mind of the clinical man would be more at rest on this point.

The age of the patient has an important bearing upon the differentiation of many closely analogous  $x$ -ray observations. If fluid is found in the pleural cavity, age has a bearing upon the differential diagnosis of tuberculosis and carcinoma. It is of recognized importance in osteitis

fibrosa cystica and Paget's disease, in Kohler's disease, in metastatic carcinoma of bone, in endothelial myeloma and osteomyelitis.

Patients are often referred to the roentgenologist with a simple request for stereoscopic films of the lower lumbar spine. If the clinician would state what specific information he most desired to obtain, and allow the roentgenologist to elect the method of procedure, better results might be forthcoming. Thus chronic low back pain without a history of injury immediately suggests the desirability of raying the entire lumbar spine and of making a special investigation of the fifth lumbar vertebra for a possible spondylolisthesis or some anomaly.

Patients are sometimes referred to the  $x$ -ray department with a request for a lateral film of the skull when it is the desire of the referring physician to rule out a fracture. In a case of this kind the radiologist should be permitted to select his own procedure, as none would be so bold as to exclude fracture with a single lateral film.

If he is told that the clinical evidence points to a new growth in the region of the optic chiasm the roentgenologist will know at once what procedure will best produce the  $x$ -ray confirmation of the diagnosis.

A case was recently referred to my department of the Miller Clinic in St. Paul, with a request for an  $x$ -ray examination of the sinuses. My report stated that all sinuses were negative except the right maxillary which was relatively dense, and that this probably indicated a right antritis. The rhinologist then told me that he had attempted irrigation and had met with unusual resistance. A further study of the original films, with the aid of dental radiographs, revealed the fact that the clearest part of the antrum was near the floor, and that the density was not entirely homogeneous in character. On the strength of this evidence, clinical and radiological, a correct diagnosis of polyposis was made.

While the diagnosis of bone tumor depends largely upon  $x$ -ray evidence, the latter is often contradictory or inconclusive, and all clinical evidence may be required to avoid serious error in diagnosis and prognosis.

The diagnosis of fracture is usually a simple matter but in the region of certain joints this is not always true. Here the nature and severity

of the injury should be known, and if there is a definite tender point this should be described to the roentgenologist. A case was recently referred to the writer for an *x*-ray examination of the elbow. The films were made by a technical assistant, and presented for interpretation. There was no gross fracture but in the region of the internal epicondyle there was a small osseous body the size and shape of a pea. The condyle itself was apparently intact. A history of the case told me at once that this was of no significance from either a clinical or a medico-legal standpoint, and I was able to render a report of "no fracture."

A common tendency among clinicians is to refer a case to the *x*-ray specialist, with a request merely for a gastro-intestinal examination. But a complete study of the entire tract to rule out every conceivable lesion or functional disturbance which might be *x*-ray demonstrable might require days or even weeks of observation and entail no small expense. Hence, a short cut is the usual procedure and the history and clinical

findings should indicate where to cut. If some functional disturbance of the colon is suspected a barium meal is indicated, but if clinical evidence suggests carcinoma or ulcerative colitis, the enema will often suffice.

#### SUMMARY

An attempt is made to show the value of close coöperation of clinician with radiologist in the solution of various diagnostic problems. Consideration is given to different anatomical subdivisions of the body, including the skull, the chest, the abdomen and the long bones. The writer advances the suggestion that now, since the pioneer days of roentgenology are no more, and the *x*-ray specialist has proven his right to a "place in the sun" he should be taken more into the confidence of the clinical practitioner, and that these two minds should be made to so coördinate that they function as one.

The roentgenologist is unselfish in his attitude, and desires no glory greater than that of serving his fellow physician.

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#### PHENYLAMINOETHANOL SULPHATE

The Council on Pharmacy and Chemistry publishes a preliminary report on phenylaminoethanol sulphate which has recently been synthesized, and studied pharmacologically and clinically and proposed for use as a substitute for ephedrine. The A. M. A. Chemical Laboratory examined a specimen of the product used for the recent clinical work and found it to be a pure substance having the composition claimed. Although the Council will await confirmatory reports before accepting the substance for New and Non-official Remedies, it believes that the results already recorded justify further experimentation clinically. To avoid confusion, the Council has adopted the name "phenylaminoethanol sulphate." (Jour. A. M. A., October 6, 1928, p. 1037.)

#### CLEANING THE "DENTAL AUGEAN STABLES"

For years the dental profession, as the medical profession before it, has had its share of "peddlers" of worthless nostrums and quack remedies. Therefore the recent action of the American Dental Association pointing toward the establishment of a bureau of chemistry for the examination of dental drugs is noted with satisfaction. The American Dental Association will render a public service by exposing many of the worthless "dentrifices," "mouthwashes," "pyorrhea remedies," and what not purveyed to the public. Equally important and a more fertile field for activity are the so-called ethical remedies. The American Dental Association proposes the establishment of its own council on pharmacy and chemistry. Congratulations to dentistry in its campaign to clear the "Augean stables" of dental materia medica. (Jour. A. M. A., October 13, 1928, p. 1113.)

## ARTHRITIS\*

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ARTHRITIS is usually the localization in the joints of some pathologic condition affecting the body as a whole. In other words, most joint diseases are secondary to some infectious or non-infectious systemic condition. There is probably one primary joint condition, progressive fibrous polyarthritis.

From the age, the history and the condition of the joint itself one usually determines to which main group the patient belongs. If he is young and presents painful, swollen joints which he says have bothered him for about a month, or even for six months; if he is obviously sick, pale, under-nourished and perhaps slightly febrile, he undoubtedly is suffering from some form of infectious arthritis. If the patient is a woman older than forty years and complains that her knees are painful, or that her feet, hips or back hurt after she has been standing for some time; if she is a "stylish stout" and has flat feet and knock knees, she is certainly showing the results in her joints of some static or metabolic, rather than infectious, process.

These are the principal guide posts and the two main roads to search for the causative agent. There are many branches and there may be some distances where the two roads travel together, or where different branches cross or join each other, for there are shades, relations and degrees in arthritic diseases, as in any other condition of multiple etiology. An infectious arthritic patient may be ill in bed with a very high temperature and joints so acutely inflamed as to be unable to bear the weight of bedclothes, which is the typical picture of acute rheumatic fever; or the non-infectious patient may be thin, rather than stout, with gnarled and misshapen hands and a stiff back (fixed spine). In either case the two main types hold, infectious and non-infectious.

The non-infectious type comprises those forms of arthritis due to static, mechanical, occupational, metabolic, senile, or neurogenic causes. These are degenerative arthritides. None of

these is benefited by removal of teeth, tonsils, gallbladder, appendix or tubes, which may or may not be infected, but are materially helped by proper orthopedic, dietary or specific therapy.<sup>1</sup>

The most common form is known by the old name of arthritis deformans.<sup>2</sup> If one employs this often loosely used term in the original, strict meaning, given to it by Virchow and other early investigators, no difficulty results. Recently some have questioned the basis for this expression and have applied it to almost all forms of chronic deforming arthritis. Others have apparently tried to retain the original meaning, but have implied that part of the etiology for the degenerative changes was an earlier infection which accelerated the process of joint decadence to produce the deformity. Still others have applied the term to the chronic infectious arthritides. Therefore, in view of this obscurity in terminology, it seems better to adopt the expression "degenerative arthritis," applied in 1909 to these non-infectious conditions by Nichols and Richardson.<sup>3</sup> This, too, is a descriptive term and subject to criticism, but it will be used in the subsequent discussion.

The disease is not inflammatory. The first changes are degeneration of cartilage, followed by calcification and new growth of osseous tissue. This hyperplasia occurs particularly on the edges of the cartilage to produce the well known spurs, which lead to limitation of motion. The extreme expression of this degenerative form is the senile arthritis generalis, or the hypertrophic coxæ senilis. This process may extend to the synovial membrane and produce villous polypoid excrescences. These spurs and villi may, in the large joints and those more subject to trauma, break off and produce foreign bodies, or "joint mice." The Goldthwaite knee, or so-called villous arthritis, is an example of this type of joint. Goldthwaite himself<sup>4</sup> made certain distinctions between these synovial villi and the other hypertrophic changes, but such distinctions are what have muddled the whole arthritis situation.

On examination the joint is found deformed in various ways, depending upon the location of

\*From the Department of Medicine, The Nicollet Clinic, Minneapolis. Read before the 28th Annual Meeting of the Tenth District Medical Society of Wisconsin, at Eau Claire, October 4, 1928.

the joint itself and the length of time the process has gone on. In the small joints of the fingers, for instance, there are enlarged, knobby, bulbous knuckles, while the whole hand is gnarled and crabbed. The knees are enlarged and palpation reveals fine or coarse crepitations. The joints are not tender to pressure or touch, but are so on motion. In other joints, such as hip, elbow, or shoulder, direct examination does not yield so much information, but *x-ray* examination of any joint will show the typical excrescences, spurs, ragged or absorbed cartilage and bulbous deformities. When the hypertrophic spurs cause irritation, there may be small collections of fluid in the joints. The pain results from use of the joint and disappears when the joint is at rest.

When such a joint is found, the patient must be investigated as to the state of his metabolism, the mechanics of his station, and the degree of aging which his other organs show. Many think that this type of joint is an expression of aging of the structures. As will be noted later in connection with the infectious forms of arthritis, the joints, due no doubt to their rather sparse blood supply, are very sensitive to changes in the state of circulation. Even a small degree of arteriolar sclerosis could conceivably produce senile changes in the joint before the condition of generalized arteriosclerosis would be well enough established to be recognizable in palpable vessels, albuminuria, cardiac enlargement, or increased blood pressure. A careful study of the retinal vessels in these cases may shed some light. In many cases actual or premature aging is the only explanation. In others, one finds the individual obese, and the hips, knees or ankles affected. There may, with this obesity, be knock knee or flat foot which has for many years thrown the station off balance and, by the consequent persistent trauma on the weight-bearing joints, produced the condition found. Therapy then becomes a matter of weight reduction and the institution of orthopedic measures to correct the malalignment of the joints.

The changes may result, especially in women, during or after menopause,<sup>5</sup> from an imbalance of the endocrine functions with consequent obesity and lowered metabolic rate. Hypothyroidism or lowered metabolism is not uncommon, in which case thyroid extract is of benefit. It must be remembered that hypothyroidism may exist at this time of life without obesity, and vice versa.

Carbohydrate intolerance, shown by an increase of the fasting blood sugar or a difficulty in mobilizing sugar, as indicated by the glucose tolerance test, may also be present alone or in combination with either obesity or hypothyroidism, or both. A reduction of the total calories and the carbohydrate of the diet often halts the process. Cecil indicates that a reduction diet and thyroid medication are effective because they reduce weight, even if there is no more specific action. At any rate, as Pemberton has shown,<sup>6</sup> the joints themselves are sensitive to chemical changes in the blood, particularly to oxygen and glucose. He attributes the improvement in the symptoms in these cases to the fact that reduction diets spare the joint tissues such extra work. The so-called pulmonary hypertrophic osteoarthritis is thought to be the extreme expression of what can happen in a joint when the whole body is insufficiently aerated, due to extensive lung pathology.

The hypertrophic spine changes (spondylitis deformans) often produce painful symptoms as the result of trauma or hard or unusual strain and labor carried over into the later periods of life. In the laboring man or woman it is a question whether the changes are not occupational from the beginning. The type in which the hyperplasia occurs along the transverse processes is likely to be painful from the onset, and until a permanent ankylosis results, due to involvement of the root radicles. The spurs which grow from the vertebral bodies are often symptomless until some trauma causes them to impinge upon surrounding structures. These spinal cases have also given the nosologists some concern and they have attempted to divide arthritic spines into those in which the spine alone is affected called the Von Bectereu type, and the Strumpel-Marie type, which exists with changes in some peripheral large joint also.

These hypertrophic spines are a prolific source of acrimonious debate in the law courts. An elderly individual is taken for a ride and dumped into a ditch by a well-meaning friend, and when the *x-ray* pictures of the sprained back are brought into court, the most extensive spurs and ankyloses are found up and down the lumbar spine. The plaintiff insists, and probably truthfully, that he never had any trouble with his back until the accident, but that after that time he has not been comfortable for a moment. His

medical witness is almost convinced that the accident itself produced all the trouble. It undoubtedly did produce the pain, but it could not and did not produce the spurs on the bodies of the vertebræ. The insurance company, however, has a very difficult time avoiding the payment of damages.

The classic metabolic joint is that caused by gout. This condition is not common in this country. In its most typical form, affecting the great toe, it is not hard to recognize, due to the vivid and accurate description given in both medical and lay literature. At times, however, young individuals present a less acute polyarticular form with fever. The finding of an elevated uric acid blood content, together with the *x*-ray picture, usually establishes the diagnosis in either case. The difficulty lies in the very chronic cases after the urate deposits have caused enough irritation to the joint to produce hypertrophic changes, which by the *x*-ray and outward appearance are very similar to degenerative arthritis. The use of medication to mobilize the uric acid and the restriction of the purines in the food are the therapeutic indications.

Another rare form of arthritis which might be called metabolic in causation is the decalcified joint occurring in the pregnant or nursing woman. These joints are painful and slightly swollen and the *x*-ray shows areas of decalcification at the ends of the bones, usually in the small bones. Marked and immediate benefit results from a milk diet and the addition of large amounts of calcium lactate.

Before leaving the subject of non-infectious joints, mention should be made of syringomyelia and Charcot's joints (neurogenic), the allergic arthritis often accompanying urticaria or the result of protein sensitization, and those ill-defined colloid swellings in the fibrous tissues about the joints of cachectic, nephritic and diabetic patients. All of these are rare and can scarcely be confused with the main types.

Infectious arthritis may be secondary to some known bacterial disease in the patient, or to some focus of infection, or the disease may be a primary infectious arthritis, the exception mentioned in the introductory paragraph. The type of arthritis which is most characteristic of the acute infectious form is acute rheumatic fever. After mentioning this disease, I shall leave it. It is a bacterial disease which affects the joints as

part of its pathologic attack on the body. The prognosis and treatment are concerned not so much with the arthritic phase as with the endocarditis, as the joints usually return to normal on healing.

The diseases most often responsible for an acute arthritis are gonorrhea, scarlet fever, pneumonia, meningitis, dysentery, septicemia, puerperal fever and Malta fever. In these conditions there is a localization in the joint of the specific organism. The pathological process usually occurs in the epiphyseal ends of the bones, as would be expected in a blood borne infection, and from there invasion of the surrounding structures continues. There is often exudate which may become purulent. This type is seen in its characteristic form in either gonorrhea or scarlet fever. In the former, it occurs in the second or third week of the infection, or after any recurrence of a chronic lesion.<sup>7</sup> It may begin as a polyarticular affair, but it soon settles in the knee, ankle, or the small joints of the hand. It is often accompanied by tenosynovitis, which on healing may lead to deformities. Of all the acute invasions of the joint, the gonorrheal produces the most destruction. It is of the utmost importance to adequately treat the contributing source, which is usually vesicular, but which may also be glandular, prostatic or tubal.

An arthritis in scarlet fever may occur on about the tenth day and simulate a mild allergic swelling, with or without exudation, like that seen in serum sickness. It may occur later, probably due to secondary streptococcic metastasis, in which case it is more like the gonorrheal joint, and may become purulent. The *x*-ray picture in any of these acute infectious joints is usually entirely negative in the early stages. Later, areas of rarefaction are seen in the epiphyseal ends, which may in time appear like cavities. Bone atrophy will then result.

The arthritic manifestations in Malta fever and dysentery are very likely due to secondary streptococcic invasion. Those of meningitis and pneumonia may be due to the specific organism, or may be secondary.

Puerperal fever or septicemia is usually streptococcic and rarely staphylococcic, and produces purulent, surgical joints.

In practically all of these secondary types, except possibly gonorrhea, the joint will return to

normal if the patient recovers from the primary disease.

The chronic secondary joint condition is tuberculosis, and the tuberculous joint disease, like acute rheumatic fever, is a subject in itself.

Next we have to consider the joint disease secondary to focal infection. The picture of this focal arthritis has been very well presented by Cecil and Archer.<sup>8</sup> The onset may be acute or insidious. Females seem to be more subject to the affliction than males. The average age of onset is about thirty-five years, although in our own experience the majority of patients are younger. The attack, whether it be acute or chronic, is prone to occur after some infectious incident or exposure, or after some debilitating experience, such as confinement or surgical operation. The joints are all affected, one after another, both large and small. This invasion of joints is not only migratory, but also shifting; that is, pain and swelling may leave a joint and after an interval return to the same joint. There is slight fever during the more acute exacerbations and the joints themselves often become distinctly hot and red. The *x*-ray shows nothing of diagnostic import in the earlier stages, and even in the later stages only disuse atrophy may be seen in those members which have been most continuously affected. The pathology is primarily periarticular and proliferative in character. There are none of the degenerative hypertrophic changes seen in the other types of arthritis, unless the condition becomes so chronic as to extend over into the decadent period of the individual's life. Accompanying the joint symptoms are always bodily aches and pains, neuritic and myositic manifestations from the same focus.

In the more acute forms the condition must be differentiated from rheumatic fever, often a difficult undertaking, and one requiring careful observation over a period of time. Sooner or later the rheumatic joint clears up, and in the meantime the patient may develop a heart murmur. In rheumatic fever other embolic phenomena, such as petechial and subcutaneous nodules, will be discovered.

In the more chronic forms, focal arthritis may be confused with the primary progressive fibrous arthritis, to be mentioned later. The focal cases, however, never have the amount of muscle or bony atrophy found in rheumatic fever, and the joint involvement is shifting and migratory, with

the accompaniment of other body pains. Focal arthritis will be confused with the degenerative forms in only the extremely chronic and neglected cases already mentioned, the age of onset, history and appearance of the joints themselves being much different. When it has become clear that a focal case is being dealt with, the focus, or foci, must be sought. It will be found that the teeth and tonsils are most commonly to be indicted, but a careful investigation of the sinuses and middle ear should also be made. Recently it has been found that the prostate and cervix may harbor the cause. The gallbladder or appendix may be affected, particularly, in our experience, the former. An old chronic bronchitis or bronchiectasis may be feeding the system with organisms and very rarely a chronic pyelonephritis. Whatever the location, the proper steps should be taken to eradicate the primary infection.

During the more active stages, the joints should be kept at rest. The application of heat and the administration of salicylates help to relieve the pain. Often on attacking the cause by tonsillectomy, prostatic massage, cervical cauterization or amputation, the joints temporarily become worse. The prognosis is good for a complete recovery if the cause is found early, before the infection has become established in the joint tissues; in the latter event, there will probably be exacerbations until the infection is overcome by the natural immunological processes, and certain deformities may result. In the more persistent forms, after the original focus has been removed, foreign protein therapy often hastens the action of such defense mechanism.

It is in these more persistent chronic forms also that Pemberton's advocacy<sup>9</sup> of low caloric and low carbohydrate diet can successfully be carried out. He shows that chronic infectious arthritic patients have a slight lag in their metabolic functions, probably due to the infection. They are slow to eliminate salt and water and have a high blood creatin and a lowered sugar tolerance. All these findings are common to chronic infections, and consequently dietary regulation often helps a great deal. On the basis of further work by Pemberton, the beneficial effects of heat were also proved to be upon a metabolic basis. Arthritics whose body temperature is raised by baking or other methods are much more comfortable. Local heat, therefore, is de-

sirable, as are general bakes, mild massage and exercise and sun baths; in short, anything which will increase the local or the general circulation will mobilize the waste metabolites with which arthritics and infectious cases in general are troubled.

Finally, we come to the primary form, the progressive fibrous polyarthritis which presents itself in two ways, the benign and the malignant. This disease usually attacks young individuals and is, as the descriptive name implies, a progressive, fibrous, periarticular type of polyarthritis. The malignant form kills the patient within a year or two. The individual is cachectic, anemic and febrile to a slight degree. The pathology is in the periarticular structures and attacks the joints one after the other. When it has once involved a joint it does not leave it. There is a diffuse fusiform swelling with much muscular atrophy and the joint gradually becomes ankylosed, due to the fibrous contractions. In the malignant form the onset is more sudden and the course is steadily progressive, until death occurs from inanition and anemia. If the patient can weather the onset, the disease becomes more prolonged, subject to periods of remission and exacerbation, and under proper management he can live as a wheelchair invalid for years. There is no known etiological cause. Certain of these longstanding cases with the ankylosis and deformities produced by the periarticular fibrous changes have been carelessly designated as arthritis deformans, also atrophic arthritis and rheumatoid arthritis, which is confusing, and simply emphasizes the fact that a descriptive term used as a name of a disease is likely to be very generously applied to anything that has a faint resemblance. Certainly these cases have arthritis and they have deformed, atrophic joints, but they present an entirely different picture from the knobby, bony excrescences of degenerative non-infectious arthritis on one hand, and the transiently swollen joints without deformity or atrophy of focal arthritis on the other.

It is an infectious process, undoubtedly, as proved by the appearance of the joints and the state of the patient, but it must be primarily an infection of the joint structures, as removal of all foci has no effect upon the course of the disease, which remains persistently in a joint after the first attack, until the death of the patient. Furthermore, there is usually no initiating

infectious incident and the disease progresses by remissions and exacerbations entirely independently of intercurrent infections, which in this type of patient are extremely rare. There are usually no sources of infection about the individual anywhere, and in those instances where some organ, like the tonsils or appendix, has been removed empirically, no appreciable effect on the joint condition results. In its more malignant form the disease is often accompanied by an iritis which is likewise intractable and progresses to the production of blindness. The malignant, or Jaccoud, form is hopeless.

The benign form, in spite of its being an infectious disease, does not show the metabolic changes that the focal infectious cases show; therefore, we have found it best to put these patients on high caloric feedings with an abundance of minerals and calcium, together with sunshine or Alpine ray, just as we do the tuberculous individual.

In conclusion, the working outline used in this discussion is presented.

#### ARTHRITIS

##### *Non-infectious:*

1. Degenerative Arthritis (osteoarthritis, hypertrophic arthritis)

Due to :

- a. Menopause in women
- b. General senile changes
- c. Static or mechanical factors
- d. Occupational or direct trauma

2. Metabolic

- a. Gout
- b. Decalcification
- c. Pulmonary hypertrophic osteoarthritis

3. Neurogenic (Charcot and syringomyelia)

4. Special Types

- a. Allergic
- b. Toxic (as in tuberculosis during absorption of pleural exudate)
- c. Colloid (an amyloid-like change in cachectic conditions)
- d. Hemophilic (really only an exudation in the joint cavity)

##### *Infectious:* (Proliferative, atrophic, periarthritic)

1. Acute rheumatic fever, a systemic disease with joint and cardiac localization
2. Primary progressive fibrous polyarthritis
  - a. Benign (rheumatoid or atrophic)
  - b. Malignant (Jaccoud)
  - c. Still's disease in infants

3. Secondary arthritis
  - a. Focal—acute (rheumatoid)  
chronic (atrophic)
  - b. Specific
    - Gonorrhea
    - Scarlet fever
    - Pneumonia
    - Meningitis
    - Typhoid fever
    - Dysentery
    - Malta fever
    - Puerperal fever
    - Septicemia
    - Tuberculosis

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## EXAMINATION OF THREE CAFFEIN-REDUCED (SO-CALLED DECAFFEINATED) COFFEES

The A. M. A. Chemical Laboratory reports on the caffeine content of the most widely advertised caffeine-reduced (decaffeinated) coffee products. The products examined were: Blanke's Refined Health Coffee, made by the Blanke Health Coffee & Tea Corporation, St. Louis, a coffee extract said to be made by a process which results in caffeine reduced approximately 90 per cent. Kaffee Hag, marketed by the Kaffee Hag Corporation of Cleveland and recently purchased by the Kellogg Co., Battle Creek, Mich., marketed with the claim that 97 per cent of the caffeine has been removed. Sanka Coffee, sold by the Sanka Coffee Corporation, New York, which was recently purchased by the Postum Co., is sold with the claim: "Sanka Coffee Caffeine-free 97%." The Laboratory found the following percentages of crude caffeine content determined by weight in the specimens examined: Blanke's Refined Health Coffee, 3.98 per cent; Kaffee Hag, 0.50 per cent; Sanka Coffee, 0.28 per cent. The Laboratory points out that the claim that a certain per cent of caffeine has been

removed means little if the original caffeine content is not stated. Coffee varied in caffeine content from as little as 0.1 per cent to as much as 7 per cent, though the latter figure is very exceptional. Obviously, without knowing how much caffeine is in the original coffee (which the manufacturers do not state), it is impossible to calculate the amount removed. Further, the figures of caffeine removal mean little because the quantity of coffee used is the factor in determining the amount of caffeine consumed. The Laboratory states that numerous investigators have shown that an ordinary cup of coffee contains from 0.1 to 0.12 Gm. (1¼ to 1¾ grains) of caffeine. The Laboratory calculated the amount of caffeine which might be expected to be contained in a cup of coffee made according to directions: Blanke's Refined Health Coffee, 1 grain; Kaffee Hag, almost 1 grain; Sanka Coffee, about ¼ grain. By actual trial following the firm's directions the Laboratory found one cup of coffee made from Kaffee Hag to contain ¾ grain of caffeine and a cup made from Sanka Coffee to contain 0.4 grains. (Jour. A. M. A., September 22, 1928, p. 880.)

## INSULIN IN OBSTETRICS\*

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THE course of pregnancy in the diabetic patient presented a gloomy picture prior to the introduction of insulin. New information is steadily accumulating on the subject in the files of physicians who are treating both conditions, but as yet the published cases are few, and consequently the data are incomplete.

In 1926 a summary of the literature, together with two case reports from the Mayo Clinic, was presented by Parsons, Randall and Wilder.<sup>1</sup> Recently, Walker<sup>2</sup> noted that only four cases of pregnancy and diabetes treated with insulin, including one of his own, had been reported in England. Bowen<sup>3</sup> has had five such cases under observation and has followed two patients through two pregnancies each. Walker<sup>2</sup> was able to collect nineteen cases from the literature, including those mentioned above. Reveno's case,<sup>4</sup> reported in 1923, was not treated with insulin throughout the pregnancy, but only at the onset of acidosis, which occurred during the eighth month, and which led him to induce labor.

No doubt, many pregnancies are now occurring in diabetic women who, without the aid of insulin, would be doomed to sterility. Pregnancy took place in only three per cent of the diabetic women of child-bearing age observed at the Mayo Clinic<sup>1</sup> for four years; at the Sloane Maternity Hospital it was found in only one out of twenty patients, or five per cent, as observed by Wiener<sup>5</sup> over a period of six years; in Joslin's experience it occurred only eleven times and in only five per cent of the 427 women studied by Von Noorden.

Formerly, when pregnancy occurred in a severely diabetic woman, the outlook for survival was poor for both the mother and the child. Wiener<sup>5</sup> reports thirty per cent mortality during labor or immediately post partum, and twenty-one per cent mortality during two and one-half years, because of the increased severity of the disease following pregnancy. Some of the French authors (d'Offergeld, de Vincy)<sup>6</sup> have found that fifty to fifty-five diabetic women out

of a hundred die during gestation, the puerperium or a few months later. Death of the child at birth or soon after was to be expected in more than half of the cases. Briefly, then, about one-half of the few women who became pregnant died during or soon after the termination of pregnancy, and less than half of the children lived.

The following case of a diabetic woman who has gone through two pregnancies, with no complications except severe insulin shock a few days after delivery, illustrates the change in outlook in recent years, and also raises again the question of variations in sugar tolerance during pregnancy and the puerperium.

On August 12, 1924, a woman aged 27, the mother of one child four years old, presented herself for treatment, giving a classical history of diabetes of two years' standing, including weight loss and periods of amenorrhea. After three weeks in the hospital, where she applied herself with unusual intelligence to the problems of diet and insulin administration, she was discharged on an allowance of protein 40, carbohydrate 50 and fat 115 (1,395 calories) and 20 units of insulin daily. This was soon increased to protein 45, carbohydrate 85, fat 130 (1,690 calories) and 25 units of insulin.

She has continued the same diet since that time and has varied her insulin according to the presence or absence of sugar in the urine. She has managed her diabetes entirely without medical advice, coming for blood sugar determinations only when requested to do so at rare intervals. Her weight gradually increased and she menstruated normally two months after leaving the hospital, having previously missed five periods.

In March, 1926, one and one-half years after the institution of treatment, she came to the Nicollet Clinic and was found to be six months pregnant. The consciousness of fetal movements was her first intimation of this condition, for she had interpreted her amenorrhea as a diabetic manifestation and had continued in otherwise excellent health and normal weight. She carried on the management of her own case, and on July 3, 1926, she was delivered of a healthy child in the automobile on the way to the hospital. She placed herself under the care of her family physician and remained in the hospital for ten days, managing her own diet, insulin and urine tests.

During pregnancy her insulin requirement varied from month to month, although her food intake remained constant. For four months prior to the beginning of pregnancy she found it necessary to increase

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her daily insulin to 40 units, instead of the 25 units which had previously kept her sugar-free. On December 18, when she was two and one-half months pregnant, she cut the insulin dosage in half, taking 20 units daily for one month. It was increased to 40 units for the next three months (fourth, fifth and sixth months of pregnancy, approximately). It was gradually increased to 50 units, at which dosage she continued for the last six weeks and for three days after delivery. On the third day post partum she experienced a feeling of weakness similar to the mild insulin shocks which had occurred previously, lost consciousness and did not awaken for four and one-half hours. The nurses reported that the attack started with a chill, that she took orange juice, ate food, moved about in bed and answered when spoken to, but the patient remembered nothing of this.

She reduced her insulin, taking 25, 15, 20, 25 and 30 units on consecutive days, and left the hospital ten days after delivery. Two days later, while nursing the baby, she again had a period of weakness and loss of speech which lasted for two hours. She attributed the attack to the fact that she had forgotten to eat her midday meal.

She remained sugar-free on a daily allowance of 32 units of insulin and continued to nurse the baby for three months. Five months after cessation of lactation she again became pregnant. During this pregnancy there were no variations in tolerance. After delivery, which occurred on December 2, 1927, seventeen months after her previous delivery, she reduced her insulin to 20 units, from the 32 units taken during pregnancy, but found sugar to be present in the urine constantly. At the end of ten days she returned to her previous dosage. Her milk supply was inadequate and she weaned the baby after two months, soon after which normal menstrual function returned.

Having observed this patient through two successful pregnancies with no apparent damage to her sugar tolerance, it seemed important to survey the fate of other similar cases, for the purpose of comparing statistics with those of pre-insulin days. Three important questions were considered: (1) What is the outlook for maternal survival? (2) What is the outlook for fetal survival? (3) What changes in sugar metabolism, maternal and fetal, can be expected during and subsequent to pregnancy?

Twenty-six pregnancies, occurring in twenty-three patients with diabetes, have been found in the literature. Two of Bowen's cases<sup>3</sup> were observed through two pregnancies, as was the case reported herewith. These cases have been analyzed from the standpoint of outlook for fetal survival and of outlook for maternal survival and health. Most of them have been treated with insulin throughout pregnancy, and in only a few

cases has insulin been instituted merely as an emergency measure during labor.

#### OUTLOOK FOR FETAL SURVIVAL

The outlook for survival of the fetus is still far from hopeful. In the twenty-six pregnancies, death of the child occurred eleven times, or in forty-three per cent of the cases, five times in utero, and six times shortly after birth (from eight hours to five days). The reduction from the high mortality rate of the pre-insulin cases is not enough in so small a series of cases to be significant.

Over-development of the fetus is apparently common in the diabetic mother. In Bowen's six cases<sup>3</sup> born at term, three weighed ten pounds or over and one weighed nine pounds. Development was equivalent to full-term in Kaufman's case,<sup>10</sup> although the child was born seven or eight weeks prematurely. Ehrenfest<sup>11</sup> and Labbe<sup>12</sup> cite a case reported by Dubreuil and Anderodias in which the child of a diabetic woman weighed 5,000 grams, although born one month prematurely. The Islands of Langerhans were markedly hypertrophied, as were those in the case of Gray and Feemster,<sup>13</sup> which died five days after birth, presumably of a hypoglycemia. Lesions were found in the pancreas of both mother and child in Ambard's case.<sup>1</sup> Hydramnios is considered a frequent complication in diabetes with pregnancy, but is mentioned only once in the above twenty-six pregnancies.

#### OUTLOOK FOR MATERNAL SURVIVAL

Only four mothers of the twenty-three died near the time of delivery, giving a mortality rate of seventeen per cent (or fifteen per cent, considering each pregnancy as a separate hazard). This compares favorably with previous figures, which varied from twenty-seven per cent (Whitredge Williams) to fifty or fifty-five per cent (d'Offergeld and de Vincny, quoted by Henneberg and Bickel).<sup>6</sup> The twenty-three collected cases probably represent patients with a more severe form of diabetes than the series reported by earlier authors, for without insulin many of them would have failed to conceive or would have suffered early abortions.

#### CHANGES IN MATERNAL TOLERANCE

Information as to variations in tolerance is available in comparatively few cases. The phenomenon seen in Carlson's dogs<sup>7,8</sup> in which the

TABLE I

Kaufman <sup>10</sup>	Patient died fifth day after delivery. Acidosis. Hypoglycemia third day postpartum. Child lived. Fully developed, though 7 to 8 weeks premature.
Henneberg and Bickel <sup>6</sup>	Patient lived. Child died in utero.
Labbe and Couvelaire <sup>12</sup>	Patient lived. Tolerance improved after delivery. Child normal.
Gray and Feemster <sup>13</sup>	Patient died fifth day after delivery; toxemia of pregnancy. Tolerance improved during last month. Child died fourth day after birth. Hypoglycemia. Hypertrophy and hyperplasia of pancreas.
Ambard (Quoted by Parsons <sup>1</sup> )	Patient died. Child died 23 hours after birth. Child was diabetic and pancreatic lesions were reported in both mother and child.
Wiener <sup>5</sup>	Patient lived but tolerance decreased after delivery. Child died in utero.
Soler <sup>14</sup>	Patient lived. Tolerance improved after delivery. Child normal.
Ehrenfest <sup>11</sup>	Patient lived. Tolerance increased after delivery. Hypoglycemic reaction second day. Child normal.
Reveno <sup>4</sup>	Patient lived. Tolerance increased after delivery. Labor induced in eighth month. Child died 16 hours later.
Parsons <sup>1</sup> Case I	Patient lived. Tolerance unchanged. Hypoglycemic reaction second day. Premature birth. Child lived.
Parsons <sup>1</sup> Case II	Patient lived. Tolerance increased during pregnancy. Child normal.
Bowen <sup>3</sup> Case I	Patient developed acidosis. Recovered. Tolerance increased after delivery. Child normal, weighed over 9 pounds.
Bowen <sup>3</sup> Case I Second pregnancy	Patient developed acidosis. Recovered. Tolerance unchanged afterward. Premature birth. Child died 8 hours later.
Bowen <sup>3</sup> Case II	Patient died two hours after delivery by cesarean section. "Toxemia of pregnancy." Child died in utero. Weighed 10 pounds.
Bowen <sup>3</sup> Case III	Patient lived. Tolerance unchanged. Child normal. Weighed 6 pounds.
Bowen <sup>3</sup> Case IV	Patient lived. Tolerance increased after delivery. "Sensitive to insulin" during pregnancy. Hydramnios. Child weighed 10 pounds. Died 8 hours after birth.
Bowen <sup>3</sup> Case V First pregnancy	Patient lived. Required 70 units insulin during pregnancy. Delivery at seven months. Child died of jaundice three days later.
Bowen <sup>3</sup> Case V Second pregnancy	Patient lived. Insulin requirement increased from 70 to 96 units during pregnancy and fell to 50 units after delivery. Child died in utero and was delivered at five months.
Stansfield <sup>15</sup>	Patient lived. Tolerance decreased during pregnancy but improved afterward. Labor induced at eight months. Child lived.
Graham (Reported by Walker <sup>2</sup> )	Mother and child both lived.
Lambie (Reported by Walker <sup>2</sup> )	Patient and child both lived. Tolerance improved after delivery.
Walker <sup>2</sup> (Reported from Queen Charlotte's Practice of Midwifery)	Patient and child both lived.
Peters (Quoted by Parsons <sup>1</sup> )	Patient lived. Tolerance improved after delivery. Labor induced at eight months. Child lived.
Walker <sup>2</sup>	Patient lived. Acidosis at time of delivery but tolerance improved later. Refused diet and insulin and died one year later.
Hansen First pregnancy	Patient lived. Tolerance decreased during pregnancy but improved after delivery. Hypoglycemic reaction two days later. Child normal.
Hansen Second pregnancy	Patient lived. Tolerance unchanged during pregnancy and afterward. Child normal.

fetal pancreas was thought to prevent diabetes in the mother, seems to be infrequent in the human patient. Gray and Feemster's case<sup>13</sup> improved in tolerance during the ninth month. One of Parsons<sup>14</sup> improved during pregnancy, and the case reported herewith improved during the third month of one pregnancy, but required a gradually increasing amount of insulin after that.

Ten of the patients required less insulin after delivery than immediately before, and Wiener's patient<sup>5</sup> is the only one who was observed to have a gradually falling tolerance throughout the pregnancy as well as for four months afterward, while she was under observation. As a rule, the tolerance was unchanged or improved after the puerperium.

Postpartum hypoglycemic reactions were recorded six times, three times on the second day and once on the third day, and in two cases the time was not recorded. Insulin was reduced rapidly in others, thereby preventing reactions.

#### ANIMAL EXPERIMENTS

Considerable experimental work has been done in an effort to analyze the metabolic changes occurring in the pregnant diabetic patient. Carlson and his co-workers in 1914 and 1915<sup>7,8</sup> produced diabetes experimentally in pregnant dogs by removing the pancreas. If this was done late in pregnancy, within two or three weeks of term, corresponding to the seventh month in the human patient, the expected hyperglycemia and glycosuria did not occur as long as fetal life continued and the placental connections remained intact. At the onset of labor the maternal blood sugar began to rise and severe diabetes was established by the completion of delivery. The fetal pancreas was thought to take the place of the mother's.

Markowitz and Soskin<sup>9</sup> found that female dogs, depancreatized before or during pregnancy, and carried to term by means of insulin, usually secreted no milk and were free from hypoglycemia after delivery. Those that suckled their pups became hypoglycemic, suggesting that the withdrawal of blood sugar for the synthesis of lactose was responsible for this condition. It is stated that milk-fever in cows is due to a hypoglycemia, and can be cured by injecting air into the udder, thus stopping the secretion of milk and permitting the blood sugar to return to normal.

#### COMMENTS

It would seem that, with the present methods of treating diabetes, a larger number of severely diabetic women are becoming pregnant than heretofore. The prognosis for survival is much improved since the use of insulin, but if a diabetic woman becomes pregnant she must be kept under unusually strict medical observation. Acidosis and coma may develop without warning and labor may have to be induced as a life-saving measure, even though insulin has been given in adequate amounts. Hypoglycemia may occur during the first few days of the puerperium and the maternal tolerance is likely to rise very promptly after delivery. The outlook for fetal survival has not kept pace with the improving maternal mortality figures.

More blood sugar studies in both the mother and the child, and more autopsy examinations, with special attention to the pancreas, will gradually increase the available knowledge, and may lead to means of reducing the strikingly high mortality figures.

Cases of diabetes and pregnancy must be much more common than a search of the literature would indicate, and the publication of reports would be of distinct value in managing and treating this poorly understood group of patients.

#### SUMMARY

1. Two normal pregnancies occurring in a diabetic woman under insulin treatment are reported.

2. Twenty-six pregnancies in twenty-three diabetic women treated with insulin, including the above case, have been reported in the literature.

3. The maternal mortality rate was seventeen per cent, and the fetal mortality rate forty-three per cent.

4. Hypoglycemia following delivery occurred six times. Other variations in sugar tolerance often occurred during pregnancy without rule or warning. Insulin dosage was reduced in many cases after delivery, and in only one case was there a progressive increase in the severity of the diabetes after the cessation of pregnancy.

5. More case reports and more detailed studies are needed in an effort to deal properly with this serious combination of conditions.

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## President's Letter

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SOME twenty-five years ago an ambitious young surgeon did a radical operation on a patient for cancer. After the operation he came to the conclusion that his diagnosis was wrong. He decided that if possible this should not happen again. He closed his office and spent two years studying in the great medical centers of the world in an endeavor to learn how to recognize malignancy. This man is today a leading surgeon in the state and a recognized authority on malignant growths. This typifies the spirit of scientific medicine—to recognize our weaknesses, both individually and collectively, and be willing to make real sacrifices to correct them.

The year is ending and this is an excellent time for each one of us to ask himself the question, "What have I done in the past year to improve my own efficiency?" and also, "What have I done to better the medical profession in my community?"

In the past year the officers of the State Association have visited practically every Society in the state. We have been impressed with the genuine enthusiasm for scientific medicine in the great majority of medical men, particularly in the smaller societies. We need, however, still more thoughtful effort toward making the practice of medicine a co-operative community concern. This is a fast moving age and if we would keep up we must do it by better team work and a larger view of our responsibilities. I like to picture the future State Medical Association as a financially strong corporation directing the economic and educational development of all the members and promoting and directing Public Health activities in the state along lines of greater efficiency at a minimum cost.

In conclusion may I wish every member "A Merry Christmas and a more Prosperous and Happier New Year."

*C. B. Wright*

# EDITORIAL

## MINNESOTA MEDICINE

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## Arthur Sweeney

Occasionally nature combines certain precious elements in creating a rare personality that will, while on its way, bring a little brightness into this world; whose activities will enrich the lives of many and who, on finally reaching journey's end, will leave behind a path of achievements, brightened with rare friendships and the love and esteem of many.

Arthur Sweeney came to St. Paul in 1887. He immediately assumed a place of leadership among the rugged and virile profession of those days. From 1893 he limited his professional activities to neurology and psychiatry, and he soon

advanced far in those fields. However, he was not confined to medicine. His activities were many sided. He was one of the principal founders of the St. Paul Institute and the Informal Club, whose activities he directed until his death November 7, 1928. Art, natural history and museum problems were his hobbies. He extended the activities of the Institute over the entire city, so that it would come in touch with and benefit the common people. He created and maintained through the Institute the only night schools where employed young people could obtain an accredited high school education. In the early days as secretary of the State Board of Medical Examiners, he was a power in forcing and obtaining higher standards of medical education. His fame in medico-legal fields is common knowledge.

Many were the elements of his character. A benevolent Celtic ancestry had endowed him with rare wit, subtle humor, and a magnificently resonant voice. His mind was rugged. His tastes were simple. His kindness and good fellowship were proverbial. He was especially a friend of the young doctors. Unsolicited and unknown he has, times without number, gone out of his way to help the young man in the struggle of his profession. His writings, although not profuse, were timely and far above the usual medical articles in value as to content and especially in literary merit. His last article\* has been compared to Stevenson's "Apology for Idlers" and proclaimed fully equal to it as a literary achievement.

During the war he was one of the first to offer his services. Declined twice by medical boards because of his age and an irregular heart, he nevertheless immediately got into service as a contract surgeon. He was in charge of the psychiatric division at Camp Dodge. From testing thousands of soldiers he was probably one of the first in this country in arriving at the lesson to be learned in applying this knowledge to civil problems. This interest led him into the fields of immigration. He wrote

\*The Single-Track Mind. MINNESOTA MEDICINE, October, 1928.

many articles in the popular magazines to create public interest, and he was one of the main factors in supplying Congress with proper data and advice in forming the present Immigration Law.

He was noted as a speaker; his wit, humor and wonderful voice has saved many a medical banquet during the past forty years. He was generous almost to an extreme. He was courageous. He loved the battle of keen cross-examination in court. Many is the time he brought woe to those lawyers who delighted in "toasting" the doctors on the witness stand.

Words are a poor medium in portraying him. He has left us a memory that is precious. He has gone to his friends, among them the pioneer physicians, Boeckmann, MacLaren, Sneve and many others, to rightfully take his place. Such a man was Arthur Sweeney.

GEORGE N. RUHBERG, M.D.

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### The General Practitioner

Two harsh sayings recently made anent the shortcomings of the practicing physician are worthy of the attention of the general practitioner. The criticism made to the Medical School Committee by the Dean of a medical school must rankle in the mind of many a physician. The Dean wrote that the ordinary doctor would like, if possible, to hold practice stationary at the level for which he was trained and intimated that he was at least a decade behind the times. This saying might be discounted, but it finds support from Dr. Fishbein, who states that from his experience it takes at least ten years for discoveries to filter down to the general practitioner.

The implication would seem to be that means of keeping adequately informed are lacking or that they are not made use of.

The general practitioner has been accused of attending in but scant numbers the excellent short courses offered by the University and of failing to give much support to the lately proffered extension courses, although there are signs of their gaining in favor. He has been accused of not attending medical meetings. He has been accused of reading medical articles by

title if at all. He has been accused even of deriving his knowledge of advances in medicine from the agents of drug and instrument houses.

Sweeping indictments are usually much exaggerated, but attendance upon the recent A. M. A. meeting, a survey of its scientific exhibits and the reception, later, of instruction during a series of lectures by specialists, strengthen the uneasy impression that Dr. Fishbein and the Dean have at least some grounds for their contentions.

From the practitioner's standpoint the above mentioned means of keeping up with the times have to be critically examined to see if they warrant the expenditure of the necessary money and time.

Turning to his library proper he finds several difficulties. Again considerations of money and time enter. Books are expensive; many are out of date before they come from the publishers.

If book-reviews are depended upon, his shelves are apt to become cluttered up with volumes that have failed to make an appeal. Consultation of books consumes time for the extraction of desired information and the piecing together of a consensus of advice. The book indexes are often poor.

The additions to loose-leaf systems do indeed intimate that there is something new embedded in the reformed pages—to be dug out by comparison with the material replaced.

The year-books contain large amounts of material of little interest to the practitioner, while matter that is of interest is treated of in insufficient detail.

Let us assume that the physician was—at one time—last month, last year, last decade—up-to-date in his knowledge of medicine. If a compiler and a publisher of sufficient courage to undertake a book of unusual format could be found, it might well be possible to get out a book that the practitioner would buy and read and that would conserve both his time and money. It should be a book based on the assumption of a complete knowledge of medicine of ten years ago, and should leave out all description of that state of knowledge. It should confine itself strictly to setting out—for practical use—the advances made during the preceding decade.

The book should describe in minute detail any

new procedure likely to be of use to the general practitioner. It might be of the loose-leaf kind and might use more than one size of type. Marginal letters and numbers could be used to show to what extent any procedure or treatment has been accepted and whether it is rising or declining in favor.

H. B. A.

### Periodic Examinations

It was Dr. Burnside Foster, of Saint Paul, who first proposed a definite plan for the periodic examination of life insurance policy holders. The suggestion made in April, 1909, to the Association of Life Insurance Presidents apparently was seed sown in fertile soil. As the value of the procedure expressed in dollars has become manifest, insurance companies have stepped into line in using this method to cut down their mortalities.

If periodic examinations are worthwhile to insurance companies they are worthwhile to the laity as a whole. The publicity given the idea by insurance companies, the Life Extension Institute, lay periodicals and of late the Gorgas Memorial Institute has resulted in some twenty million routine examinations last year, according to an estimate by Dr. Franklin Martin, president of the American College of Surgeons.

In Dr. Martin's inaugural address before this college in October the plan for a "Health Inventorium" was described and was apparently awaiting adoption by the College. The detailed plan in brief is quoted for the information of our readers:

1. Every standardized hospital shall furnish an examining room or rooms, to which any legalized practitioner, who is a member in good standing of his respective county medical society and the American Medical Association, may bring a patient for examination. There shall be no charge for the examining room.
2. The hospital shall furnish to the practitioner every facility in the way of aids, consultants when necessary, laboratory tests, etc., as will insure a comprehensive audit of his patient's condition.
3. The charge for the required laboratory tests shall be nominal, and a maximum of actual cost.
4. The physician shall render to the patient a bill covering his fee for the examination, and where there is a charge for laboratory services he shall be responsible to the hospital for its payment.
5. No hospital shall accord these facilities to any

individual who is not accompanied by his or her doctor, or who does not carry a letter from his or her doctor in which certain services are requested.

6. An individual who applies for an examination and who has no physician should be referred to a duly appointed, disinterested committee consisting of a representative or representatives of the county medical society and the standardized hospitals of the community, and this committee shall advise the patient in the selection of a physician.

7. Except in dire emergency, no hospital shall treat a patient who was examined in the Health Inventorium, except by request or consultation with the referring physician.

Certain objections present themselves from even a casual perusal of the plan. Confusion is liable to result from placing the facilities of a hospital at the disposal of any member of the county medical society. If such a proposal is feasible, why not abolish hospital staffs? If the proposal as a whole meets with much response the hospital laboratories are likely to be taxed with work on a cost basis and any profit to the laboratory from work from without the hospital is likely to be *nil*. Paragraph 4 is somewhat ambiguous. Shall the physician pay the hospital laboratory if the patient doesn't or shall he include the amount of the laboratory fee in his statement to the patient? The latter interpretation would certainly present opportunities for splitting fees.

Physicians have different ideas about the way to conduct a practice. For those who are consulted at a hospital the logical place for them to conduct health examinations is at the hospital. If the usual private office is efficient for examining sick individuals, it certainly is equipped for periodic examinations.

It is a fact that certain physicians, specialists particularly, are not interested in making so-called health examinations. The point of view in making these examinations is somewhat different but the main difference lies in there being little or no "present complaint" with these patients. The examination itself is no more extensive than most patients are entitled to when calling on a physician of any kind. Special investigation should be carried out in either case as leads indicate.

It seems safe to predict that periodic examinations will continue to increase in number but the routine use of hospitals for this service is not likely to prove popular with either patient or physician, at least in this part of the country.

### Historical Committee

Are you interested in the history of medicine in Minnesota? Do you know who the man is whose portrait we here present? Do you know that a committee of this association is collecting material for a History of Medicine in this State? Will you help us in obtaining information as to the men who have made medicinal history in



your town, city or county? The committee, of which Dr. H. M. Workman of Tracy is secretary, would be glad of your coöperation. The man whose portrait we show was Dr. Samuel Willey. He came to St. Paul in 1852 and was elected President of our present State Medical Association at its organization in 1869.

A Minnesota State Medical Society was organized in 1853. Would you be interested in knowing who the men were who organized these societies and what became of them? Did you know that one of the men who helped form our present State Association is still living? Will you coöperate with us in obtaining information on the progress of medicine in Minnesota? Let us hear from you. Next month, if you are interested, we will tell you who was the first physician to come to Minnesota to practice his profession.

J. M. A.

### MISCELLANEOUS

#### THE AMERICAN PUBLIC HEALTH ASSOCIATION WITH ITS ALLIES

The American Public Health Association has received an invitation, headed up by the Hennepin County Public Health Association and supported by a notable group of institutions, to hold its annual meeting of 1929 in the City of Minneapolis, after an interval of thirty years absence.

The sponsors of this invitation are: The State of Minnesota; The City of Minneapolis; The University of Minnesota; The University Medical School; The Minnesota State Board of Health; The Minnesota State Medical Society; The Minnesota Public Health Association; The Minneapolis Civic and Commerce Association; The Hennepin County Medical Society; The Hennepin County Public Health Association; The Hennepin County Sanatorium Commission; The Hennepin County Tuberculosis Association; The Minneapolis Board of Public Welfare; The Family Welfare Association; The Children's Protective Society; The Woman's Club of Minneapolis; The Visiting Nurse Association; The Minneapolis Department of Public Health; The Minneapolis Council of Social Agencies; The Woman's Co-Operative Alliance; The Hennepin County Child Welfare Board; The Council of Jewish Women; and The Infant Welfare Society.

Dr. A. J. Chesley, of the State Board of Health, Dr. Francis E. Harrington, Health Commissioner of Minneapolis, together with Dr. Richard Olding Beard, of the Hennepin County Public Health Association, brought back from the Chicago meeting of the National health body the unanimous acceptance of the Minneapolis invitation by the Governing Council. The support of the invitation by Dr. Benjamin F. Simon, Health Commissioner of Saint Paul, is very gratefully acknowledged.

The American Child Health Association has been invited to unite in joint session with the older organization, as it did at the Chicago meeting in October.

The newly organized International Society of Medical Health Officers, of which Dr. Francis E. Harrington has been elected President, will hold its first annual meeting in 1929 during the days of the Convention.

Conjointly, the third Northwest Conference for Child Health and Parent Education is to be planned for a brief, but for as choice a program as it has so successfully supported in the past two years. It is proposed that some form of permanent organization be effected at that time.

It is hoped that the Minnesota State Public Health Association, the State Sanitary Conference, and the State Organization for Public Health Nursing will consent to hold their annual sessions coördinately with the program of the National Body.

Still another coincident event will be planned for the occasion. The new pavilion on the Medical Campus of the University for the occupancy of the Department of Preventive Medicine and Public Health, its Division of Public Health Nursing, and the Student Health Service will be finished at this time and the American

Public Health Association is invited to participate in its dedication.

A new project is proposed for the Minneapolis meeting of the American Public Health Association, in the form of a special educational health exhibit and program to be presented during the entire session.

This will be in addition to the usual scientific and commercial exhibits staged from year to year. Successfully established, it will be maintained as an annual performance by the Association and kept continuously up to date. Naturally, it will especially center about the whole problem of child development. In connection with it, model clinics for infant, pre-school and school child study and betterment will be set up and conducted during the session.

Minneapolis and the Northwest are fortunate to have this opportunity of initiating a great educational project.

Mr. Holmer N. Calver, Executive Secretary of the American Public Health Association, and his Staff have visited Minneapolis and have been in conference with its health representatives for several days during the past month.

RICHARD OLDING BEARD.

#### MINNESOTA HOSPITAL AND HOME FOR CRIPPLED CHILDREN

On Nov. 10, 1928, on the Hospital Quadrangle of the University of Minnesota, with simple and impressive service, the corner stone of the Minnesota Hospital and Home for Crippled Children was laid before a large and distinguished audience. This building, which will form a new unit to the present University Hospital, has been made possible by the gift of two million dollars given by the Honorable William Henry Eustis, former Mayor of Minneapolis.

The Honorable Fred B. Snyder, President of the Board of Regents, presided. Music was furnished by the University of Minnesota Military Band. Invocation was given by Reverend J. S. Bushnell, Pastor of the Westminster Presbyterian Church. Addresses were delivered by Dr. Lotus D. Coffman, President of the University of Minnesota, Dr. E. P. Lyon, Dean of the University Medical School, and Dr. Charles H. Mayo, Rochester.

Mr. Snyder in opening the ceremonies traced the life of Mr. Eustis, who was crippled when he was fifteen years old, and deprived of his physical fitness for manual labor. He devoted his life to the development of his mind, graduating from the Law Department of Columbia University, New York.

In the year 1881, Mr. Eustis left his native state, New York, and came to live in Minneapolis, where his interest in public, civic, and philanthropic affairs made him an outstanding leader.

In the year 1923, Mr. Eustis sent for members of the University of Minnesota Board of Regents, and stated that for many years it had been in his mind that, if he acquired enough money to make it worth while, he would donate it to the use of Crippled Children. In offering the gift to the Board of Regents, he desired the University to have full control of the funds.

The object of the gift is to enhance the well-being of crippled children, and he suggested for this trust the name, "Minnesota Hospital and Home for Crippled Children." However, Mr. Eustis did not want the world crippled to narrow the activities of the staff, but rather to include a child with defective heart and lungs, who is as much incapacitated as one with deformed limbs.

A luncheon was served for the speaker and honor guests in the hospital after the ceremonies.

#### CHRISTMAS SEALS

Eight thousand four hundred and ten men, women and children.

This might represent the population of one of Minnesota's cities—but it does not. It represents the victims of tuberculosis in the state in the past five years.

There is nothing new about tuberculosis except its victims. Year after year, quietly, insidiously, it exacts new tribute in human lives, desolated homes, and frustrated dreams and ambitions.

And who are its victims? More than one-fifth of the 8,410 people who died in Minnesota in the past five years from this disease, were between the ages of fifteen and twenty-four. To strike at the youth of the country at this age period when parents should begin to realize on the investment of rearing and educating its young men and women means a tremendous loss to home and state.

It is to the girls and young women that tuberculosis is the greatest menace, statistics show. Between the ages of fifteen and nineteen years, more than twice as many girls died in the five-year period as boys. While in the twenty to twenty-four year period approximately 30 per cent more deaths occurred among women than men.

Tuberculosis deaths in general have been cut almost in half in Minnesota in the twenty years the Christmas Seals have been at work. But as long as the disease continues to strike at our young manhood and womanhood with such dire results, the tuberculosis fight is far from finished.

Christmas Seals, now on sale, furnish the ammunition to carry on this work. The greatest hope lies in prevention through education, and this is the work of the penny stamp.

#### MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

The Minnesota State Board of Medical Examiners reports the following prosecutions for practicing medicine without a license and for violations of the Basic Science law in so far as the Basic Science law covers the practice of medicine and surgery:

*Williams, Boyd* (Minneapolis)—Entered a plea of guilty, fined \$100.00.

*Vian* (*Vian Medical Institute, Osakis*)—Claims to be champion of the world on cancer. Entered a plea of guilty, fine of \$250 and if not paid is to serve eight months in the county jail. Fine paid.

*McGraw, Robert* (Hewitt, Minnesota)—Filed a complaint under the Medical Act charging the defendant with treating one Peter Thompson, a farmer living west of Villard, for heart trouble. The fee alleged to have been paid was \$35.00. The defendant entered a plea of not guilty and after a preliminary hearing he was bound over to the district court for trial. The state presented its case and at the completion of the same the case was dismissed by the Court. The dismissal took place June 22, 1928, at Glenwood, Judge Flaherty presiding. The defendant is an old offender, having been arrested four times in Todd County for various offenses.

*Kolling, A. J.* (Minneapolis)—Licensed chiropractor, entered a plea of guilty to a violation of the Medical Practice Act for attempting to treat syphilis. Fined \$150 or 30 days in jail. Fine paid.

*Stolurov, Peter J.* (Hamm Bldg., St. Paul)—Licensed chiropractor, arrested for performing an illegal operation; entered a plea of guilty. Sentenced to imprisonment in the State Prison at Stillwater at hard labor according to law, which means up to four years imprisonment.

*Schultz, Pauline* (Hamm Bldg., St. Paul)—Licensed masseuse, charged with the crime of abortion. Jury trial. Found not guilty.

*Errington, Robert* (Bellingham)—Unlicensed practitioner, known as Kanawana, the Indian Doctor. Early in 1927 found guilty by a jury of practicing medicine without a license and fined \$100. In April, 1928, two complaints were filed, one charging him with a violation of the Medical Act and one charging him with a violation of the Basic Science Law. June 20, 1928, he entered a plea of guilty to the charge of violating the Medical Act and was sentenced to 6 months in the county jail at Olivia, 5 months of the sentence being suspended on the condition that he refrain from practicing. After Errington was sentenced he made an attempt to escape his jail sentence by withdrawing his plea of guilty; in this he was not successful and as a result he entered the Renville County jail August 27, 1928, and left on September 27, 1928. The charge to which he entered a plea of guilty involved his taking \$250 from a farmer north of Bird Island, for which sum he was to "cure" the farmer's wife of "heart dropsy." The woman died within 60 days after the initial treatment from Errington. Errington is out on \$1,000 bail in second case. Court convenes in December.

*Ewald, Emilie D. K.* (Olivia)—Naturopathic physician. Has no license of any kind. Investigated June 1, 1928, and because of her plea at that time to be given a chance to move out of the state, no complaint was filed. She did not leave, however. August 16, 1928, two complaints were filed, charging Mrs. Ewald with maintaining an office for diagnosis, treatment, etc., of ailments, and a complaint charging her with using a word or words indicating that she was engaged in the healing art, to wit: "naturopathic physician." After a preliminary hearing she was held to District Court under bonds of \$1,000. On September 29, 1928, Mrs. Ewald entered a plea of guilty to main-

taining an office, etc., in violation of the Basic Science Law and she was sentenced by the Court to 30 days in the Renville County jail; the sentence was suspended indefinitely on the condition that she refrain from practicing in Minnesota and that she leave the state. If Mrs. Ewald attempts to practice healing in this state she will not only be punished for second offense but she will have to serve jail sentence above imposed.

*Koskimaki, W. W.* (New York Mills)—Has no license of any kind, but has taken the massage examination and failed. According to information filed, he was practicing at New York Mills. Complaint was filed for a violation of the Basic Science Law and a warrant issued for his arrest. The deputy sheriff reported that the defendant had left town when he went to arrest him. Koskimaki returned to New York Mills, however, and was arrested. Released upon cash bail of \$500. Case dismissed on defendant's promise to leave the state permanently, which he did.

*Kirby, S. R.* (Thief River Falls)—Promised to close his place of business in letter written to County Attorney of Pennington County.

*Dufort, J. E.* (Northome)—Admits violation of the law. Took the matter up with the County Attorney. Dufort given until the first of August, 1928, to close his place of business.

*Miller, Royal* (Austin-Albert Lea-Worthington)—Itinerant unlicensed "healer," whose home is at Clear Lake, Iowa, so he says. His work is a semi-massage and chiropractic treatment. Informed that after he works on a patient he washes his hands and the water becomes blue, red or some color and he tells the patients that he has drawn off that poison. Miller admitted violating the Basic Science Law. The county attorney after a little talk with him told him to get his hat and coat and get back to Iowa just as fast as he could get there and to stay there.

*Beach, Mrs. Frank* (Springfield)—Investigated the practice of this woman and found that she had treated a diabetic patient who lives on a farm about 16 miles from Springfield in Redwood County. The patient was interviewed at her home and after obtaining the evidence a complaint was filed and a warrant issued for her arrest. Mrs. Beach has been living at the hotel in Wanda, a little town about 17 miles from Redwood Falls. She had advertised in the papers at Springfield and Redwood Falls. She is an Indian Root and Herb Doctor. She wanted \$100 from the patient, but she received only \$25. When the sheriff went over to Wanda to arrest her she had left with her husband. Evidently she had been "tipped off" the previous evening. If Mrs. Beach is apprehended she will be prosecuted to the full extent of the law.

*Ross, Charles, alias R. J. Dietrich* (Pine River)—The name of Dr. R. J. Dietrich, a reputable physician now practicing in Kansas, was assumed by Ross. Thereafter he attempted to operate a hospital at Pine River. His place of business was closed August 15, 1928. He has left the state.

The foregoing report shows that we have six cases to our credit where the defendant paid a fine or was

sent to jail or prison; that we have had two defeats, one of which was at the hands of a jury and the other by order of court. In addition to these results, Miller and Koskimaki left the state; Kirby closed his place of business; Mrs. Beach when the sheriff went over to arrest her had left. Twenty-eight other cases were investigated in various parts of the state, but prosecutions were not instituted for the reason that they either were not justified or the same result was accomplished without prosecution.

It is the intention of the board to see that every phase of the medical act and basic science law is fully enforced as it is their duty to so do under the law.

It has taken some time to organize the work and to have it handled in an efficient and dignified manner.

The board has not resorted to subterfuge in this work, but every case prosecuted has been a bona fide case of actual treatment at the hands of the defendant.

The board fully intends to continue this work in the same vigorous manner in the future and will continue to do so as long as complaints come in for violation of these two laws.

A. E. COMSTOCK, M.D.  
*Secretary.*

#### ANGLO-AMERICAN DOCTORS IN EUROPE

With rare exceptions hotels in Europe refuse to give the address of American or English doctors, endeavoring always to have the hotel doctor employed, who they claim speaks English perfectly. When this doctor arrives, if he speaks English at all, it is usually so poorly that the patient does not fully understand him and he feels that the doctor has not fully understood what was said to him, and is consequently irritated and alarmed and his trouble aggravated.

To overcome this boycott, the "Continental Anglo-American Medical Society" was organized in 1885 and in 1889 commenced the publication of a list of the Anglo-American doctors practicing in Continental Europe and Northern Africa; and, wishing to establish the closest relations possible with their colleagues in America and England, will send a copy of this list, free of charge, to anyone applying to the Secretary, Dr. Sherwood-Dunn, 54 Bd. Victor Hugo, Nice, France.

#### LIVER TREATMENT IN SPRUE

From reports it appears that anemia of sprue in which there is a high color index and fewer than 2,000,000 erythrocytes can be expected to respond to the administration of Minot's liver fraction (Liver Extract No. 343, N. N. R.) with a shower of reticulocytes, unless the bone marrow is hypoplastic. Clinical cure, apparently, follows, but the type of pernicious anemia persists for at least two months after liver extract has been administered. A recent report of a case of sprue treated with Liver Extract No. 343, N. N. R., refers to a patient who was admitted to the hospital in a moribund condition and who has apparently recovered completely. (Jour. A. M. A., October 6, 1928, p. 1038.)

## OBITUARY

### Dr. Frederick G. Kohler

Frederick G. Kohler of Minneapolis, died Aug. 2, 1928, at Eitel Hospital, of heart disease, aged 52 years.

Dr. Kohler was born in Watertown, Minnesota, Jan. 17, 1876, where he received his early education, later attending High School and Stevens Seminary in Glencoe, Minnesota.

He was married in Glencoe in 1898 to Gertrude E. Deane, who, with three children, Gertrude, Gretchen and Geneva, survive him.

Dr. Kohler was graduated by the Medical Department of Hamline University in 1897, and thereafter practiced general medicine for twenty-five years. He first practiced in Forest City, and after three years removed to Stewart, Minnesota, where he remained until 1918. Dr. Kohler was among those who enlisted early in the World War, was commissioned a First Lieutenant and was stationed at Camp Custer, Battle Creek, Michigan. Following the war he went to Hector, Minnesota, where he practiced general medicine and began preparation for and devoted part time to specializing in eye, ear, nose and throat work. In 1925 he moved to Minneapolis and became associated with his brother, Dr. Geo. A. Kohler, with whom he remained until the time of his death.

Dr. Kohler was a member of the Hennepin County Medical Society and the affiliated State and American Medical Associations.

### Dr. Everett Charles Hartley

Dr. Everett Charles Hartley died at his home in Carver, Minnesota, September 19, 1928, of heart disease.

Dr. Hartley was born at Picatonica, Illinois, August 24, 1855. He had practiced medicine at Carver for nearly fifty years. It may be truthfully said that the doctor was eminently successful in his chosen profession. In 1887 he was married to Miss Bertha Strache.

Dr. Hartley is survived by his widow and two sons, Dr. Everett Hartley of St. Paul and Scott R. Hartley of Los Angeles, California.

A memoir of Dr. Hartley in the Carver Journal-Review contains the following tribute: "We have lost a good friend, a fine citizen, a loyal neighbor a distinguished practitioner. His memory will live, for his good deeds were like the sands of the sea."

### Dr. Robert M. Phelps

Dr. Robert M. Phelps, of St. Peter, Minnesota, died at the home of his daughter, Mrs. C. W. Cross, in Faribault, Oct. 22, 1928, after an illness of four days from a long standing chronic myocardial degeneration.

Dr. Phelps was born in Ripon, Wisconsin, May 15, 1858. His father was Able McEwan, and his mother, Pamela Church Brockway Phelps.

He attended Ripon College and was graduated therefrom in 1880. Entering Rush Medical College he was

graduated in 1887. He took a year's internship in a Chicago hospital and was licensed by the Minnesota Board of Medical Examiners the same year.

Dr. Phelps began his practice in Rochester, Minnesota and in 1890 was appointed assistant superintendent of the State Hospital for the Insane at Rochester. This position he held until 1912, when he was appointed superintendent of the State Hospital for Insane at St. Peter, succeeding the able Dr. H. A. Tomlinson. He held this superintendency until 1925, when because of failing health and strength he resigned and retired from active work, following which he made his home with his daughters at St. Peter and Faribault.

In 1893 he married Sarah V. Linton, M.D. She died from pulmonary tuberculosis in 1901. She bore him two daughters, who survive, Mrs. C. W. Cross of Faribault and Mrs. Floyd Johnson of St. Peter.

The doctor was interned beside his wife at Rochester, Oct. 25, 1928.

Dr. Phelps was for twenty-five years a member of the State Medical Association. For 16 years he had been a member of the Nicollet-Le Sueur Medical Society. He was also a member of the American Psychiatric Association.

Dr. Phelps was a kindly, courteous gentleman; always interested and active in the county society; considerate and helpful to his employees. He took a deep interest in the unfortunate insane that surrounded him through thirty-five years of his life. His life work was well done.

J. W. D.

### Dr. Arthur A. Sweeney

Dr. Arthur A. Sweeney died at his home, 1525 Summit Avenue, Saint Paul, on the afternoon of Nov. 7, 1928, after a week's confinement from heart trouble.

Dr. Sweeney was born in 1858 in Lawrence, Massachusetts, and received his B.A. degree at Fordham College. He acquired his M.A. degree at Georgetown University and his M.D. degree at Harvard in 1886.

After six years of practice in Saint Paul Dr. Sweeney left for postgraduate work at Harvard and in France and England. Upon his return he specialized in psychiatry and neurology.

Dr. Sweeney acquired wide reputation in his chosen field. For more than thirty years he was professor of medical jurisprudence at the University of Minnesota and lectured each year to the graduating class.

Dr. Sweeney took an active part in the founding and development of the Saint Paul Institute, which had its beginning more than thirty-eight years ago. He had served as its president since 1921. He was also one of the founders, and at the time of his death was president of the Informal Club, which has played an important part in the social activities of Saint Paul.

Besides being a member of his county, state and national medical organization, Dr. Sweeney was an honorary member of the Minnesota Academy of Medicine, a member of the Minnesota Neurological Association and the Central Neuropsychiatric Association. He

was for years consulting neurologist to the Northern Pacific, Great Northern, Milwaukee and Northwestern railroads.

Dr. Sweeney is survived by his wife and daughter, Josephine.

### Dr. William P. Lee

Dr. William P. Lee, for eighteen years a faithful physician in Northfield, Minnesota, died Thursday, Nov. 8, 1928, at Winthrop, Maine, where he had gone July 4 with Mrs. Lee and their son, Garry. His death was due to cancer. While he apparently had been failing in health for a longer period, Dr. Lee's family first knew of his condition early last May.

Dr. Lee was a native Minnesotan, born at Sleepy Eye in 1872. He grew up there and attended the local schools. After his graduation from the medical department of the University of Minnesota in 1894, he first practiced at Fairfax. Coming in 1910 to Northfield, he had practiced there until this summer, when he turned over his practice to Dr. Orrin Thorson while he went to Maine for what his friends hoped was but a temporary visit.

Two years after the family had come to Northfield, the first Mrs. Lee died. On November 7, 1914, Dr. Lee was married to Alice K. Wentworth, who survives him. There are also two sons, Phillips W. Lee, who is manual training instructor at Washburn high school, Minneapolis, and Garrison Lee, who is with his mother in the East; one daughter, Mrs. Cyril H. Davey (Ethelwyn), who lives in Minneapolis; two grandchildren; his mother, Mrs. Emma Lee, and a sister, Mrs. J. F. Knudson of Redwood Falls.

Dr. Lee was a member of the American Medical Society, and the various state and local professional societies. He was a Congregationalist and a Mason, and also affiliated with other lodges.

In addition to his extensive practice, Dr. Lee was interested in a number of community affairs in Northfield. He owned two farms in whose operation he was keenly interested.

During the war he was commissioned a captain in the medical corps, and for four months was stationed at Fort Riley, Kansas, on active duty.

Dr. Lee's was a radiant personality. He was always full of good cheer, always happy and amiable. His patients learned to know him as a friend, as well as a faithful physician, and for them he in turn gave everything he had.

### Dr. Arthur H. Steen

A Minnesota country doctor, who administered to the sick for more than a half century, and whose early practice was among the Indians on Grey Cloud island, is dead.

Dr. Arthur H. Steen, Cottage Grove, was one of the last survivors of the old school of country doctors, whose

familiar figures were seen riding the trails on horseback before the day of the automobile. Dr. Steen died at his home Wednesday, Nov. 14, 1928, aged 78. Up to the last day he continued his practice in the same office he had occupied for the past 52 years.

For 54 years Dr. Steen practiced in Washington county.

When Dr. Steen came to Minnesota 54 years ago, St. Paul was a village of a few thousand inhabitants. In those early days, he often was called to administer to the Indians on Grey Cloud island, and was on friendly terms with the Chippewa and Sioux tribes.

Dr. Steen was known in the Twin Cities as an ardent supporter of the Minnesota state fair, and, during the time he practiced in Washington county, he attended 50 fairs, exhibiting products which he raised as a hobby.

Surviving him is his widow. Dr. Steen was born in Oakfield, Wis., and came to Washington county in 1874.

## OF GENERAL INTEREST

Dr. P. B. Monroe has moved from Soudan, Minnesota, to Two Harbors, Minnesota.

Dr. J. C. Farrell of Arlington, Minnesota, has moved to Minneapolis and is now living at 3353 Park Avenue.

Dr. David E. McBroom, formerly of Faribault, Minnesota, is now associated with the medical staff for Colony for Epileptics at Cambridge, Minnesota.

Dr. J. A. Myers, Minneapolis, addressed the Illinois Tuberculosis and public Health Association at Centennial, Illinois, October 29, on the subject, "Diagnosis of Childhood Tuberculosis and Tuberculosis in Teen-Age."

The Saint Paul Clinic has leased the upper two floors previously occupied by the Ambassador restaurant on Fifth and Saint Peter Streets, Saint Paul. The Clinic will move from its present quarters in the Lowry Medical Arts Building upon completion of the necessary changes.

Dr. Brand A. Leopard disposed of his practice at New Richland, Minnesota, this last summer and is now taking a post graduate course in surgery at the University of Pennsylvania Post Graduate Medical School in Philadelphia. Dr. Leopard is living at Bywood, Pennsylvania, but has not established a practice there as was formerly announced.

Dr. John L. Haskins, who has maintained a practice in Northfield, Minnesota, for the past six years, became a member of the staff of the New York State Hospital at King's Park, New York, December 1. Dr. Haskins will be succeeded in Northfield by Dr. C. R. Wall, formerly associated with the Miller Clinic and Shrine hospital in Saint Paul.

## NEW AND NON-OFFICIAL REMEDIES

The following articles have been accepted by the Council on Pharmacy and Chemistry:

### ABBOTT LABORATORIES

Capsules Ephedrine Hydrochloride-Abbott,  $\frac{3}{8}$  grain

### LEDERLE ANTITOXIN LABORATORIES

Tablets Whole Ovary-Lederle,  $2\frac{1}{2}$  grains

### ELI LILLY & Co.

Antimeningococcic Serum Concentrated-Lilly

Antistreptococcic Serum, Purified and Concentrated (Lilly)

### MALLINCKRODT CHEMICAL WORKS

Iso-Iodeikon

### MERCK & Co., INC.

Optochin Base

Optochin Hydrochloride

### H. K. MULFORD Co.

Mulford's Acidophilus Bacillus Blocks

Tetanus Antitoxin (Bovine)

### PARKE, DAVIS & Co.

Capsules Ephedrine Sulphate-P. D. & Co.,  $\frac{3}{8}$  grain

Capsules Ovarian Substance, Desiccated-P. D. & Co., 5 grains

### E. R. SQUIBB & SONS

Tablets Protargentum-Squibb, 4.6 grains

Tablets Solargentum-Squibb, 4.6 grains

### SWAN-MYERS Co.

Syrup Ephedrine Hydrochloride (Double Strength) Swan-Myers

### NON-PROPRIETARY ARTICLES

Ethylhydrocupreine

Phentetiothalein Sodium

## TRUTH ABOUT MEDICINES

*Diphtheria Toxin-Antitoxin Mixture.*—The antitoxin used in the toxin-antitoxin mixture (New and Non-official Remedies, 1928, p. 366) is produced from the horse, goat or sheep.

*Diphtheria Toxin-Antitoxin Mixture (New Formula) (Sheep)-Squibb.*—Each cubic centimeter represents 0.1 L+ dose of diphtheria toxin neutralized with the required amount of antitoxin obtained from the sheep. Marketed in packages of three ampules, each ampule containing 1 c.c. of the mixture; in vials containing, respectively, 10, 20 and 30 c.c.; and in packages of thirty 1 c.c. ampules. E. R. Squibb & Sons, New York.

*Parathyroid Hormone-Squibb.*—A stable aqueous solution containing the active principle or principles of the bovine parathyroid glands and having the property of relieving the symptoms of parathyroid tetany and of increasing the calcium content of the blood serum. It is standardized physiologically. Parathyroid Hormone-Squibb is claimed to be specific for normal or parathyroidectomized man when injected subcutaneously for increasing the level of the blood serum calcium. It is marketed in 5 c.c. vials. E. R. Squibb & Sons, New York.

## A PAGE FORUM OF THE ✧ COMMITTEE ON PUBLIC HEALTH EDUCATION ✧

### Organization of County Public Health Workers' Council

The development of preventive work in medicine has on numerous occasions and in many places led to strife between members of the medical profession and public health workers. This was due in no small measure to the old conception of physicians that the prevention of disease was not part of their field. This view has been largely corrected and prevention is now considered of equal importance with the cure of the disease.

The coöperation of various agencies is the most essential element in the successful working out of a public health program. When the medical profession has been rightly approached, it has almost always given splendid support to public health work, although in rural communities it has been frequently handicapped by lack of men trained in preventive medicine. The new interest in preventive medicine on the part of medical schools and the increased post-graduate work, particularly in pediatrics, is gradually overcoming this lack of training. Each community presents special problems, depending on the character of its environment, the occupation of the inhabitants, its wealth, and its spirit.

In the hope that the experience in Olmsted County might be of help to other counties in the state, the Chairman of the Public Health Committee of the Minnesota State Medical Association has asked for a brief description of the development of the organization of the public health workers' council. Olmsted County is fortunate in having five organizations actively interested in preventive medicine. The city of Rochester supports the infant welfare nurse and the visiting nurse; the Rochester School Board two school nurses; Olmsted County the county nurse; and the Olmsted County Public Health Association a nurse who works largely in the county. The medical side of the infant and preschool clinics and the school examinations are carried on by a Fellow of the Mayo Foundation as part of his work toward obtaining an advanced degree in pediatrics in the Graduate School of the University of Minnesota.

The development in public health work occurred during the period between 1919 and 1927 and started as an outgrowth of Red Cross activities, the county taking over a nurse in 1920 and the city in 1922. The first school nurse was engaged by the School Board in 1922 and the second in 1926. The next addition was the nurse supported by the Olmsted County Public Health Association. For two years Sheppard-Towner help was received, but since January, 1927, the support has come entirely from the Association.

It was soon evident that if there was to be coördination and coöperation in the work, and it would be necessary for the workers to meet regularly for discussion of problems. In the past five years there have been monthly meetings at which each member was asked to report on his or her work, reports of national meetings have been given and there has been discussion as to ways and means of improving the local work. In addition to the five nurses and the pediatrician doing the active work, the meeting is attended by the City Health Officer, the field officer of the Child Welfare Board, a representative of the Social Service Department of the Mayo Clinic, and the Chairman of the Public Health Committee of the Olmsted County Medical Society, who acted as Chairman of the Council.

These monthly meetings have developed a spirit of mutual understanding of the different problems, which has done a great deal to further the work. There has developed a spirit of coöperation in the organizations represented by the workers which crystallized this fall in a meeting attended by an executive member of each one of the organizations represented. The Mayor of the city, a County Commissioner, the President of the Olmsted County Medical Society, the President of the School Board, the President of the Olmsted County Public Health Association, and a member of the Civic League met with the Council and listened to reports of the workers and unanimously voted to draw up a program of coöperation that would further to the utmost the public health work in the city of Rochester and Olmsted County.

H. F. HELMHOLZ, M.D.,  
Rochester, Minnesota.

## REPORTS AND ANNOUNCEMENTS OF SOCIETIES

### MEDICAL PROFESSION OF WESTERN HEMISPHERE TO CONGRESS IN HAVANA

The next congress of the Pan-American Medical Association will be held in Havana, Cuba, from Dec. 29, 1928, to Jan. 3, 1929. The program, which is being arranged by the President, Dr. Fred H. Albee of New York City, will be a strong one, and will include four orations, upon the subjects of surgery, medicine, pediatrics, and tropical medicine.

Dr. William J. Mayo will give the Oration on Surgery, and Dr. Lewellys Barker of Johns Hopkins University the Oration on Medicine. Papers will be read in both Spanish and English.

This congress will be representative of the medical profession of the entire Western Hemisphere. Chapters of the Association have been and are being organized in various centers of North America and Central America, as well as in the Antilles, all of which will be represented at the Congress.

One of the recent accomplishments of the Pan-American Medical Association is the establishment of the Pan-American Hospital in New York City for the benefit of the Latin-speaking people.

A large attendance is solicited.

### HENNEPIN AND RAMSEY COUNTY JOINT MEETING

The Hennepin and Ramsey County Medical Societies accepted the invitation of the U. S. Veterans Hospital No. 106 and held a joint meeting as guests of the hospital on the evening of November 5.

After a dutch-treat supper prepared by the hospital cuisine, the hospital was opened for inspection. The hospital has a capacity of some 557 beds and at present has over 500 patients. About half of these are suffering from tuberculosis and the psychiatric ward with a capacity of thirty-nine is filled. The per capita cost a day is \$4.50 and the monthly payroll amounts to about \$53,000. The medical staff numbers forty-nine, thirty-eight of whom are on a full time schedule. The hospital is at the disposal of any who have had service connection with the army irrespective of the relation of the disability to service or financial status.

The following scientific program concluded the evening meeting:

Hospital Organization.....	DR. H. B. FRALIC
	Medical Officer in Charge
Clinical Activities.....	DR. C. W. HUGHES
	Clinical Director
Medical Service:	
Angina Pectoris Associated with Myxedema	
Heart .....	DR. THOMAS ZISKIN
	Cardiologist

A Case Report of Hodgkin's Disease, Mediastinal .....DR. R. W. BRACE  
Chief of Medical Service

#### Surgical Service:

A Case of Gastro-Colic Fistula, and  
A Case of Total Gastrectomy under Local Anesthesia,  
Chief of Surgical Service.....DR. F. R. SEDGLEY  
Consulting Surgeon.....DR. S. R. MAXEINER

#### Tuberculosis Service:

Multiple Tuberculous Foci with Apparent Arrest,  
and Cases Illustrating Collapse Therapy  
.....DR. W. J. MARCLEY  
Chief of Tuberculosis Service

#### Neuropsychiatric Service:

Neuropsychiatric Service in a General Hospital  
.....DR. C. B. COVEY  
Chief of Neuropsychiatric Service  
Progressive Muscular Atrophy  
Lateral Sclerosis.....DR. ALEX G. DUMAS  
Neuropsychiatrist

### LYON-LINCOLN COUNTY MEDICAL SOCIETY

At the annual meeting of the Lyon-Lincoln County Medical Society the following officers were elected for 1929: President, Dr. Ward Akester, Marshall; vice-president, Dr. E. Engh, Cottonwood; secretary-treasurer, Dr. H. M. Workman, Tracy. Dr. E. T. Sanderson of Minneota was elected delegate to the State Association meeting and Dr. A. L. Vadheim, Tyler, alternate.

It was decided to hold another extension course beginning next April.

### WRIGHT COUNTY MEDICAL SOCIETY

The Wright County Medical Society held its annual meeting at Buffalo, Minnesota, October 18, 1928. The following members were elected to office for the ensuing year: President, Dr. E. Klaveness, Monticello (re-elected); vice-president, Dr. George Norris, Annandale; secretary-treasurer, Dr. John J. Catlin, Buffalo.

### WEST CENTRAL MINNESOTA MEDICAL SOCIETY

The West Central Minnesota Medical Society met at Morris, Minnesota, October 10, 1928.

Members of the society and their ladies were the guests of Drs. Ewing and Pierson at a seven o'clock dinner. Drs. C. B. Wright, E. A. Meyerding, J. A. Myers, Herman Johnson, and Arnold Anderson met with the society and talked on medical economics, after which a general discussion followed.

Dr. L. L. Gibbon of Lowry was elected president and Dr. H. Linde of Cyrus was elected secretary of the society for the coming year. The next meeting will be held at Morris, Minnesota, Jan. 9, 1929.

HERMAN LINDE, M.D.,  
Secretary.

## PROCEEDINGS OF THE MINNESOTA ACADEMY OF MEDICINE

Meeting of October 10, 1928.

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town & Country Club on Wednesday evening, October 10, 1928, at 8 o'clock. Dinner was served at 7 o'clock. There were 25 members present.

The meeting was called to order by the President, Dr. C. N. McCloud. Dr. McCloud reported that the Executive Committee, having charge of the revision of the Constitution and By-Laws, had had four meetings since the September evening meeting, and that a copy of the new Constitution had been sent to each member of the Academy. After some discussion a motion was carried that this new Constitution be proposed for adoption at the next meeting, with a few minor changes made at this time.

The scientific program of the evening was opened with the reading of the Thesis\* of Dr. Owen Parker, of Ely, Minn., who had been elected to Associate Membership in the Academy. The title of Dr. Parker's Thesis was "Fractures of the Ankle Joint," and after the reading of the paper Dr. Parker showed a number of lantern slides.

### DISCUSSION

DR. EMIL S. GEIST (Minneapolis): I am sure I voice the sentiments of the Society when I say that we welcome Dr. Parker, who is an old classmate of mine and of others in the Academy.

To come to the subject, these ankle fractures need careful attention. Fractures of the shaft of bones will heal and give the patient a good leg even if they are not in direct apposition. This does not hold good in fractures about the joints; especially about the ankle joint, which is a weight-bearing joint, and here exact apposition must be obtained. The slightest deviation from the normal is liable to give the patient trouble. And the time to do this is when the fracture is first treated. The orthopedic surgeon sees a great many old fractures of the ankle which give trouble and it is nearly always due to malalignment.

The subject is a large one and cannot be covered in one evening or in one paper. The simple fracture of the tip of the malleolus differs vastly from the severe comminuted and compound fractures that we so often see in industrial work.

I was beginning to think, when Dr. Parker showed his first group of slides, that life in the mining country was easy. The last pictures, however, showed some of the bad problems that one who is doing surgery of the bones has to deal with, and these are the ones that make one's hair white.

Dr. Parker's explanation of the different types of fractures is, of course, the standard one. In Cotton's fracture, there is much backward displacement of the astragalus and no surgeon can fail to realize that this unreduced will leave a bad, painful joint. It is usually

accompanied by a breaking off of a triangular piece of bone from the back and lower end of the tibia. Usually there is not so much backward displacement as in this case. These cases are often neglected. Some years ago I wrote a paper on "Old Fractures of the Ankle," and quite a group of them were of this type of fracture.

Another subject is the compound fracture. We have had in the last few months a few of these compound fractures in the ankle and have taken care of them according to Orr's method with much satisfaction. One of these I saw with Dr. Hynes.

The Doctor referred to the use of wire, and talked of using it somewhat under protest. That was my own feeling about wire until about a year ago. When abroad I brought back some Krupp wire; it is an iron wire of great tenacity and it lies quiet in the tissues. The trouble heretofore was that wire seemed to stimulate osteoclasia. We have used this Krupp wire in quite a number of cases and it is safe metal to use. There are very few metals which can be introduced near or into bone without causing trouble. Dr. Zierold some time ago did a very nice piece of work along this line. He found that copper stimulates bone growth; that all the alloys inhibit bone growth, and that pure gold and "stellite" lie quiescent. The former is too soft and the latter too brittle for use.

DR. JOHN E. HYNES (Minneapolis): The case which Dr. Geist mentions was one of compound fracture of the tibia through the internal malleolus with comminuted fracture of the fibula a short way above the external malleolus. Dust and plaster were ground into the wound. We reduced the fracture and drained by a stab wound and put it up in a tight case, liberally smearing vaseline over the entire leg. We then made a window through which inspection was possible, and have left it alone since.

I feel a certain hesitancy about shouting because I don't think that we are entirely out of the woods, as only two weeks have elapsed since the injury.

DR. ARNOLD SCHWYZER (St. Paul) reported a case of apoplexia mesenterica, or in other words "Acute formed mesenteric blood cyst."

Mr. R. C., 68 years old, weighing 268 pounds, formerly a streetcar motorman, but doing no work for the last ten years on account of heart trouble, was referred to us on September 20, 1928. He gave the following history, which, when viewed a posteriori, is in exact harmony with and straightly points to the operative findings.

Two weeks ago, directly after a meal, he was seized with severe pain in his abdomen to the right of the navel, and had to hurry into the bathroom. His bowels moved and he vomited two or three times. After two defecations that day the bowels became regular again. No vomiting or nausea occurred after that one spell. The pain had been severe enough to make him yell. His family doctor was summoned in a hurry and a hypodermic injection of morphin relieved the agony. The pain was rather severe for three or four days. After this the abdomen remained sore, but this soreness gradually grew less. The treating physician thought

\*Dr. Parker's paper will be published in the January issue of MINNESOTA MEDICINE.

an acute cholecystitis the most likely diagnosis. There was great tenderness in the area of the gallbladder. There was no marked rise in temperature. On the day after the attack, the doctor felt a resistance below the liver, and this became a distinct mass, getting larger and harder during the following days, while tenderness and pain decreased.

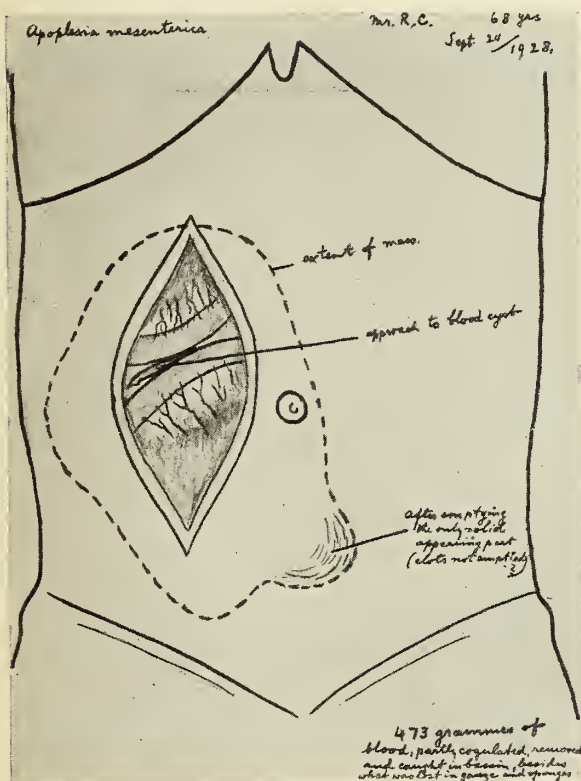
Our examination gave, in short, the following findings: The heart action was very irregular in rate and force. No murmurs were heard. The lungs were clear; no râles on the bases. In the abdomen a tumor was felt, which was moderately tender. It reached 5 cm. to the left of the navel and about 20 cm. to the right of it; 12 or 13 cm. above the navel and about 6 cm. below it. The liver dullness barely reached down to the border of the ribs, and there was a tympanitic

over the right rectus, the peritoneum being opened only in the upper two-thirds of the cut. Upon the mass, which, together with the adherent gut, was almost the size of a football, though not as deep, we found two small intestinal loops adherent. In fact, these two loops, which were entirely flattened out, with their mesenteries, the one over the upper part of the tumor and the other covering the lower half, completely concealed the mass from view. The tumor was dense and elastic. We tried to detach the intestinal loops; but the tumor did not have a firm capsule or outline, and either damage to the gut or falling into the tumor unawares seemed unavoidable. Therefore, after detaching and separating the two loops a very little, we inserted a needle for aspiration, and as this did not yield anything, we entered with a fine artery forceps. Only some old coagulated blood was found. The opening was gradually enlarged bluntly and more and more liquid old blood and coagula were delivered. It required entering with the finger into the very large cavity and breaking up of the coagula before they could be removed. The finger was moistened each time, before entering, with phenol-camphor to make sure of not contaminating this enormous bloody space. The cavity gradually collapsed and there seemed to be no distinct palpable walls to the cavity, which reached far into the right flank. The opening into the cavity remained just large enough for one finger; each time, after breaking up a new portion, it was gently squeezed out and caught in a spoon.

The question to decide was whether we were dealing with a simple mesenteric hematoma or a hemorrhage into a mesenteric cyst or a hemorrhage from a malignant neoplasm. After complete emptying, or at least as complete as seemed proper, the walls showed nowhere a thickening or irregularity to the inserted finger. From the outside through the adherent gut there was no resistance felt either, except a small rounded thickening projecting from the lower pole toward the left. It was smooth-walled and small. No irregularity had been felt from inside and it was, therefore, probably some clotted blood in a recess and not a neoplasm. But should it be such, nothing further was to be done anyway under the conditions.

Was it perhaps a hemorrhage into a pre-existing cyst? This also was not probable, because such an enormous cyst would very probably have given some symptoms even if only moderately filled. There remains the possibility of a hemorrhage into a walled-off peritoneal space near the root of the mesentery; but a localized peritonitic walled-off process away from the large gut is very rare. I have seen such a condition only once, when we had to deal with a broken-down walnut-sized lymph node. Thus one had to conclude that we had a hemorrhage from a mesenteric vessel into the mesenteric space between the two peritoneal linings, and apoplexia mesenterica.

I find in the literature, which seems meager, that blood cysts of the mesentery are drained after emptying. This we wanted to avoid. The wound had been handled with utmost care. The cavity was now completely collapsed; there was no trace of fresh oozing.



zone between the liver dullness and that of the tumor. The tumor was firm and smooth-walled as far as one could make out on the large abdomen. We made the diagnosis of either an omental or a retroperitoneal mass. The urine had good specific gravity (1023) and contained a trace of albumin, no sugar.

After preparing our patient with digitalis and after a cystoscopic examination had shown that carmin blue was secreted from the right kidney within four minutes, while the function of the left kidney was next to nothing, the patient was operated upon on September 24. We now knew that in case the tumor was connected with the right kidney, we were under no condition allowed to sacrifice this organ.

Under local anesthesia a seven-inch incision was made

The opening was left as it was; there was no sense in suturing. The abdomen was closed tight.

The post-operative course gave us considerable anxiety on account of the condition of the patient's heart, but today (October 10th) the patient is ready to go home and says he feels quite well. He has been out of bed and moving about for several days. The wound healed very well and the abdomen is soft and no masses are felt.

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DR. F. W. SCHLUTZ (Minneapolis) reported two cases:

Case 1. Tracheo-Esophageal Fistula. The case concerns a male infant two days old. The antepartum diagnosis of the pregnancy was polyhydramnios. On account of a brow presentation, delivery was by version and extraction.

The infant cried vigorously at birth but showed some dyspnea and cyanosis. There was malformation of the right thumb. Labored respiration set in about 10 minutes after birth; cyanosis became very marked, and the use of oxygen relieved this somewhat. Attacks of cyanosis occurred about every 5 minutes at first, but later decreased in frequency. A pronounced stridor developed; more pronounced during inspiration. Oxygen had to be given almost continuously to maintain the infant's color. An *x*-ray plate of the chest showed the following findings:

"The thymus was moderately enlarged. There was marked displacement of the mediastinum and heart into the left chest. The heart appeared somewhat enlarged and the whole appearance suggested some abnormality in the relation of the heart to the thorax. A laryngoscopy revealed approximation of the false vocal chords during the attack of severe dyspnea."

Fluids given by mouth were regurgitated. An attempt was made to give water by gavage. The tube was arrested before it was thought to have entered the stomach and the water was returned almost immediately.

The temperature at the end of 24 hours rose steadily to 104°. At the end of 48 hours the respiration became shallow and slow.

Post-mortem examination revealed a tracheo-esophageal communication. The upper portion of the esophagus was pouched and ended blindly at the level of the tracheo-esophageal communication.

The esophagus below the communication was thick-walled but narrow. It was patent, and air was found in the stomach.

Examination of the cranium revealed a bilateral laceration of the tentorium. This may have partially explained the stridor.

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Case 2. Cyst of the Liver. The case concerns an infant aged 11 months. Birth was normal at term. Feeding history to date is uneventful. One other child is living, is 4 years old and in good health.

The infant was brought to the General Hospital last August on account of unusual enlargement of the abdomen. No complaint of abdominal pain had been noticed. A diagnosis of cystic tumor of the abdomen

(not in the liver) was made. *X*-ray examination (fluoroscopy and plate) showed the entire colon pushed to the left. The right upper half and the left upper one-fourth of the abdomen was filled with a large opaque mass, the origin of which could not be made out.

The patient was referred to the University Hospital in September. At that time the general physical examination, except for pronounced enlargement of the abdomen, was negative. The abdomen was soft. No outline of a mass could be discerned. The liver edge was palpable below the left costal margin near the midline. Percussion revealed dullness over most of the right side of the abdomen. *X*-ray examination again showed the same picture as had been observed previously. The mass displaced the colon downward and to the left.

The possibility of cystic kidney or retroperitoneal cyst was considered. A cystogram was not taken because of an unsuccessful attempt at catheterization.

Exploratory operation was performed September 25. The surgeon's report read as follows:

"On opening the abdomen a large cyst was observed, so large that its limits could not be determined until it was punctured. The liver was practically absent. A small piece of liver tissue was present in the lower portion of the cyst. No liver tissue seemed to be present on the right side above the cyst. The left boundary of the cyst was formed by the left lobe of the liver and its wall was apparently fused with the peritoneum in the region of the ligament teres. The gallbladder, a rather elongated viscus, was present in the lower margin of the cyst wall. The portion of the liver to the right of the cyst appeared normal. No definite duct connecting with the other extrahepatic ducts was made out.

"Following drainage of the cysts, marsupialization was carried out, following excision of a good portion of the free border. Enucleation of the cyst wall was not attempted on account of the extensive dissection it would have required and the danger of extensive hemorrhage. After insertion of a drainage tube the cyst wall was sutured to the parietal peritoneum. The cyst fluid contained no bile pigment.

"On October 4 an *x*-ray examination of the abdomen was made after the cyst had been injected with an opaque fluid. The cyst had decreased in size, containing only about 1.5 c.c. of fluid. The liver shadow was small and the small intestine and the colon had expanded well into the right portion of the abdomen."

The general condition of the child was very good.

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#### DISCUSSION

DR. SCHLUTZ: I have reported these two cases because both conditions, I believe, are very rare. In the pathological material at the University there are only two other specimens of tracheo-esophageal communication. I have not had an opportunity to search the literature very carefully, but Dr. Phelps, who has done this, tells me it is a very rare condition.

The cyst of the liver, I believe, is still more rare. I have never seen a case like it.

DR. A. SCHWYZER (St. Paul): These two cases are of unusual beauty and interest. The first case, the congenital fistula between the trachea and esophagus, is a rare kind of fistula. It is a very large opening. As a rule, these fistulae are small. The bifurcation of the trachea is the level where one finds diverticula of the esophagus. The ones communicating with the trachea are rare, and still more rare is a large opening like this. We have here a great malformation of the esophagus. There seems to be no real esophagus behind at the tracheo-esophageal communication. Therefore, it appears that all there was of the foregut at that level was taken up by the formation of the trachea.

The case of the cyst in the liver is of unusual size. Cysts of the liver we see very rarely. I have seen two cases in my life; one was in an adult, an echinococcus cyst; the other case was congenital. We had there, not only both kidneys full of cysts, but we had small cysts on the spleen and on the liver. The size of this cyst of Dr. Schlutz's is surely very unusual.

As to treatment, it seems to me it was wise not to do more. These cysts will shrivel and after a while the capsule becomes hard and firm and the epithelial lining will become exfoliated or can then be cauterized away.

DR. THOS. S. ROBERTS (Minneapolis): This specimen (the tracheo-esophageal fistula) bears a curious resemblance to a condition which is normal in some birds. The Emu, for example, has a slit-like opening in the mid-trachea almost exactly like this fistula, but instead of opening into the esophagus it connects with a sac in the neck which can be distended and adds volume and resonance to the bird's voice. Birds as a class have an enormous and complicated system of air cells in the body, or other parts of the respiratory tract. They function chiefly in connection with the respiration but in many species there are special adaptations which have to do with the voice or sexual display. The bare neck-pouches of the common prairie chicken are familiar examples. The tracheal and bronchial rings are variously sacrificed to secure the necessary connections and certain of these normal openings are called to mind by the vertical slit-like fistula seen in this specimen. An eminent comparative anatomist has said that there is no anatomical anomaly found in the human body that does not exist as a normal condition somewhere farther down in the vertebrate line.

The meeting adjourned.

CARL B. DRAKE, M.D.  
Secretary.

*Diphtheria Toxin-Antitoxin Mixture 0.1 L+ (Non-sensitizing).*—Each c.c. constitutes a single dose of diphtheria toxin neutralized with the proper amount of antitoxin produced from goats (New and Non-official Remedies, 1928, p. 366, and THE JOURNAL, October 13, 1928, p. 1109). It is marketed in packages of three vials, each containing 1 c.c.; in packages of one vial containing 10 c.c.; and in packages of one vial containing 30 c.c. United States Standard Products Co., Woodward, Wis. (Jour. A. M. A., October 20, 1928, p. 1193).

## PROGRESS

Abstracts to be submitted to Section Supervisors.

Members are urged to abstract valuable articles which they run across in their reading and send the abstracts to the physicians in charge of the respective sections. In order to avoid duplication it would be well to communicate with one of the section supervisors before the article is abstracted.

## GYNECOLOGY AND OBSTETRICS

SUPERVISORS:

ARCHIBALD L. McDONALD,  
LYCEUM BLDG., DULUTH

L. W. BARRY,  
LOWRY BLDG., ST. PAUL

VARICOCELE: Meredith F. Campbell, M.D., New York City (Surg., Gyn. & Obst., 1928, XLVII, 558-565). From a study of 500 cases, the author recognizes two types of varicocele: (a) spontaneous, idiopathic or primary and (b) secondary.

The secondary type results from pressure on the spermatic vein by intra-abdominal tumors, most often of the kidney and occasionally by tumors in the pelvis.

The spontaneous type is most often seen. In this series, 9 of every 10 were between 15 and 35 years of age, during the period of the greatest sexual potentiality. Ninety per cent were on the left side. The cause of the majority being on the left is probably due to incompetent valves in the left spermatic vein rather than due to the vein being of greater length on this side. Actual measurement showed the left spermatic vein to be normally but 1.5 to 2.5 cm. longer than the right.

The etiology is not clear but is usually associated with faulty sex hygiene. Nearly all were examined and most cases left alone cleared up after marriage. The underlying factor is chronic passive congestion of the genital organs.

In the early cases, there are found dilated tortuous veins, while in the latter connective tissue hyperplasia, endophlebitis and fatty atrophy occur. An associated periphlebitis and neuritis may account for the testicular pain and atrophy. The symptoms were often those of sexual neurasthenia and a dragging sensation in the testicle. A thickened epididymis was a common associated finding.

Varicocelectomy is performed too often for this condition, as most varicoceles disappear after marriage and advancing age. Many of these patients are sexual neurasthenics and operation will not always relieve the patient of symptoms. Also severe complications may result from varicocelectomy such as hemorrhage, epididymitis, hydrocele and testicular atrophy.

Clinically, three types of varicocele occur: (a)

asymptomatic, which is best left alone whether large or small, (b) those cases which cause pain and which are benefited by operation, and (c) those which are small and may be the underlying cause of a sexual psychosis. Operation is advised only if sexual hygiene is hopeless.

The operation performed is that devised by Vincent. Following novocaine infiltration a low hernia incision is made exposing the external ring and spermatic cord. The vessels are exposed by incising the cremaster. A sufficient portion of the veins are excised so that the lower cut end when raised to the level of the external ring will elevate the testicle 2 cm. higher than it would usually hang. The upper cut end retracts into the inguinal canal. The suture on the lower cut end is left long and is passed underneath the external oblique by means of a director to a point opposite the internal ring, where it is anchored to the fascia of the external oblique. The testicle should be elevated about 3 cm. higher than normal. The wound is closed without drainage. This method uniformly relieves the pain and dragging sensation which are the common symptoms.

J. A. MAY, M.D.

**ACUTE THYROIDITIS:** E. C. Burhans, B.S., M.D., Philadelphia, Penn. (Surg., Gynec. and Obst., 1928, XLVII, 478-487). The author briefly reviewed the literature concerning the incidence of thyroiditis and found over 200 cases. His own case occurred in a diabetic female of 77 years who subsequently died of complications immediately associated with her condition.

From an anatomical standpoint the thyroid is well protected from external injury and infection. It has an exceedingly rich blood and lymphatic supply. The physiological changes which occur in the gland have a definite relation to infection. Pregnancy, acute infections, puberty, as well as the presence of adenomata are contributory factors in infections of the thyroid. Pathologically, thyroiditis consists of the acute or chronic, suppurative or non-suppurative types. The infection may be miliary in character or it may be localized to one large pus pocket. Tuberculous and syphilitic thyroiditis are the principal forms of specific non-suppurative thyroiditis but both may become secondarily infected and thereby become suppurative.

Clinically, thyroiditis occurs more frequently in females, with the greatest age incidence between 20 and 40 years. Trauma and infection are the principal etiological agents. The portals of entry for infection are through a persistent thyroglossal duct, direct invasion from surrounding tissues, lymphatic metastases and blood stream metastases. The outstanding symptoms are pain, swelling, tenderness, chills and fever, and sometimes coughing, hoarseness, dyspnea, dysphagia, and thyrotoxicosis. From the standpoint of differential diagnosis, hemorrhage, malignancy, glossitis with abscess formation at base of tongue, thyroglossal and bronchial cysts, cellulitis, and phlegmon of the neck must be considered. Conservative treatment is

indicated in the non-suppurative varieties, whereas surgery is necessary in the suppurative type.

H. R. FEHLAND, M.D.

## PEDIATRICS

### SUPERVISORS:

CHESTER A. STEWART,  
LA SALLE BLDG., MINNEAPOLIS

ROY N. ANDREWS,  
MANKATO CLINIC, MANKATO

**TREATMENT OF FUSOSPIRILLARY INFECTIONS OF THE MOUTH IN CHILDREN.** Harold K. Faber, M.D. (Amer. Jour. of Dis. of Children, September, 1928). The author's unsatisfying experience with various local methods of treatment of Plaut-Vincent infections of the mouth, particularly ulcerative gingivitis, has led him to employ, as a matter of routine, the intramuscular administration of sulpharsphenamine. The effectiveness of arsphenamine therapy in fusospi-rillary infection was demonstrated in 1919 by Ehrlich. In the same year, Gerber showed by a careful study that after the administration of arsphenamine the spirochetes in actual lesions of the mouth lost their motility within twenty-four hours and disappeared shortly, while those on normal mucous surfaces were unaffected.

With one or two exceptions, only one dose has been given. The dosage now employed is approximately 15 mg. of sulpharsphenamine per kilogram of body weight. The author does not believe local administration or arsphenamine to be necessary or advantageous, since with full intramuscular doses the beneficial effects appear to be obtained with maximum rapidity.

Often the lesions appear unchanged after one or even two days and will suddenly, on the third or fourth day, appear almost healed.

R. N. ANDREWS, M.D.

**THE USE OF DEXTROSE INTRAPERITONEALLY IN INFANTS AND IN YOUNG CHILDREN.** Clifford G. Grulee, M.D., and Heyworth N. Sanford, M.D. (Amer. Jour. of Disease of Children, September, 1928). For many years dextrose has been recognized as a carbohydrate which, when given orally or parenterally, is readily available for the purpose of combustion within the body. For the administration of dextrose subcutaneously, intravenously or intraperitoneally, an isotonic solution is, in most cases, desirable.

In 1919, Marriott advocated the use of dextrose intraperitoneally in the treatment of atreptic infants. Mitchell, in 1922, summing up the value of intraperitoneal injections in infancy, says of dextrose: "In the light of our present knowledge it is better to introduce glucose or sodium bicarbonate intravenously if their use is so urgently indicated that the giving of these substances by mouth will not suffice. In 1922, Williams and Swett found that solutions of dextrose rapidly be-

come acid on autoclaving and that the toxic action is due to this acidity.

Three hours after sterilization of the solution of dextrose, reactions would develop following injection. These varied from simple distention to severe shock when specimens that had stood a longer time were used.

Buffering the solution was successful in a majority of cases, but as in a few cases nausea developed, it was decided to overcome the tendency to acid formation in another way. This was done by autoclaving the dextrose dry and then by adding sterilized water to it. There were no effects of any kind in the dogs injected intraperitoneally with the solution in this manner.

From the authors' experience we feel that 5 per cent dextrose solution given intraperitoneally may prove a valuable therapeutic measure in a variety of conditions provided that the dextrose is sterilized in the dry state and the solution made up immediately before using.

We also feel that this method of preparation if properly and carefully carried out insures against shock following the administration of dextrose.

R. N. ANDREWS, M.D.

#### BLOOD IN THE STOOLS OF THE NEW-BORN.

Barnet E. Bonar, M.D. (*Amer. Jour. of Diseases of Children*, 1928, 36, 725). The benzidine test for occult blood was found positive in 29.38 per cent of 1,518 stools of 109 new-born. Occult blood is found too frequently in the stools of the new-born to ascribe its cause to the usual sources. Neither should it be considered physiologic.

The period during which the transitional stools are passed is a time when bacteria may be found in increasing numbers in the stools. It is entirely probable that the very presence of the transitional stool with its greenish-brown, slimy appearance is indicative of irritability of the bowel or of transitional catarrh. The most likely sources of this irritation are: by ingested food or its products of digestion, by the initial bacterial invasion or by both. A bowel unused to food, as the bowel of the newly born infant, might easily become irritated during digestion of the first foodstuffs, especially of sugar. Added to this, the possibility of irritation caused by the invasion of the alimentary tract with bacteria for the first time would well explain the irritation produced. It is a known fact that the gastro-intestinal tract of the baby is sterile at birth, but that within a relatively short time after birth bacteria gain entrance by way of the mouth and rectum.

A parallel to this is seen in the transitional catarrh of the vulva and vagina occurring on the second day, due to bacterial invasion. Furthermore during the first five days of life, there is a prolongation of coagulation and bleeding times. Such a tendency to bleed in the presence of hyperemia makes extravasation of blood a likely possibility.

More attention should be given the so-called initial diarrhea of the new-born, which appears to be another manifestation of the irritability of the bowel which occurs in the early days of life.

R. N. ANDREWS, M.D.

## EYE, EAR, NOSE AND THROAT

### SUPERVISORS:

VIRGIL J. SCHWARTZ,  
PHYS. & SURG. BLDG., MINNEAPOLIS

ARTHUR C. DEAN  
CROOKSTON, MINN.

OCULAR INVOLVEMENT IN SINUS DISEASE: E. S. Thomson (*Laryngoscope*, 1928, XXXVIII, 439, 521). The nature of sinus disease causing eye involvement is probably due to an element of mechanical pressure at first and later to extension by the blood and lymph stream. The advisability of surgical procedure must be determined by the clinical picture in the eye. In certain cases the operation is in the nature of an exploratory one. With modern technic the dangers of a correctly done sinus operation are not sufficient to justify a temporizing course where the integrity of the eye is endangered. The closest coöperation is essential between the ophthalmologist and a rhinologist of proved technical ability to secure the best results. In the majority of cases, if treatment can be promptly instituted, the results of operation are excellent—in many cases remarkable. Even in late cases, where a reasonably positive diagnosis can be made, operation should be done, as the results are surprisingly good.

Iritis and cyclitis often occur as the result of latent sinus infection. Numerous cases have been reported where an exenteration of the ethmoids cleared up the eye condition.

Two distinct types of choroidal reaction occur as result of sinus infection. One is the type in which dust-like opacities in the vitreous occur, coming on suddenly and running a chronic course. Choroidal exudation cannot be made out at first but comes later. The other type begins with plastic exudations in the choroid and often goes on to dense vitreous clouding and serious intraocular changes. This latter type is always monocular.

The optic nerve may be the seat of plastic inflammation as the result of sinus disease, either singly or accompanied by lesions of the retina or choroid. A retro-bulbar neuritis of low degree may also obtain. A pure papilledema does not occur as the result of sinus disease.

Frontal sinus infection alone does not commonly affect the eye. Infections of the ethmoids give uveal disturbances, iritis, choroiditis and less commonly retinitis.

Primary sphenoiditis gives a neuritis, retro-bulbar in type, or the peculiar functional depression of unknown pathology.

Antrum infections are probably more definitely focal in character and as a rule less serious than other types. These ocular conditions due to sinus infection often stop short when sinus operation is done.

ARTHUR C. DEAN, M.D.

## ROENTGENOLOGY

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### SUPERVISORS:

LEO G. RIGLER,  
MPLS. GEN'L HOSPITAL, MINNEAPOLIS

A. U. DESJARDINS,  
MAYO CLINIC, ROCHESTER

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**RADIOLOGICAL OR SURGICAL TREATMENT OF CANCER OF THE UTERUS.** Heyman, J. (*Strahlentherapie*, 1928, 29, 407). Selected statistics from nineteen leading surgical and thirteen radiological clinics are presented in this article in an attempt to arrive at definite conclusions concerning the superiority of operative or radiological treatment of cancer of the uterus. These statistics are based on five-year cures, and due to the differences in clinical material, absolute results are used only, *i.e.*, the end-results compared to the total number of cases seeking treatment.

In cancer of the cervix uteri, the maximum average percentage of cures from operation amounts to 20.2. At Radiumhemmet, in about 500 cases treated primarily with radiation and 41 cases not treated, the minimum percentage of cures was 20.7. The factor of operability of the admitted cases, however, should also be taken into account. In two-thirds of the surgical clinics, an operability of 59 per cent was reported, while at the Radiumhemmet an operability of 26.6 per cent was reported. Comparing the cures to the number of operable cases, the operative cures are equal to 36.6 per cent as an average, while the cures at Radiumhemmet average up to 44.4 per cent.

The author also points out the fact that, while surgery

has about reached its highest point of perfection, the radiological treatment at the time these figures were collected was just in its infancy, and should develop greatly in the future.

The cases of cancer of the corpus uteri are too few to permit accurate deductions. Comparing the 46 cases of the Radium home, however, with those collected from the surgical clinics, the results are found to be nearly equal, with the advantage being on the side of radiological treatment.

H. HILLSTROM, M.D.

**THE VALUE OF ROENTGEN DIAGNOSTICS IN CANCER COLI:** A Rcnander (*Acta Radiologica*, 1928, XII, 213). The author collected sixty-three cases which were examined roentgenologically and in which a diagnosis of carcinoma of the colon was made or in which carcinoma was found at operation. A comparison with the clinical findings indicates that a positive diagnosis of the presence of organic pathology in the colon was made correctly in 86 per cent of the cases by the roentgen method and in 56 per cent by other clinical methods. In the operable cases the roentgen diagnosis was correct in 91 per cent of the cases while the clinical diagnosis was correct in 48 per cent of the cases. In some of the advanced inoperable cases the clinical diagnoses were more frequently correct than the roentgen diagnoses. The clinical and roentgen methods supplementing each other produced a definite correct diagnosis in sixty-one of the sixty-three cases considered. The roentgen examination gives the greatest assistance in operable tumors of the sigmoid and transverse colon and the cecum.

LEO G. RIGLER, M.D.

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## BOOK REVIEWS

Books listed here become the property of the Ramsey and Hennepin County Medical libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

## BOOKS RECEIVED FOR REVIEW

**UROLOGY.** Edward L. Keyes, M.D., Ph.D., F.A.C.S., professor of Urology, Cornell University School of Medicine. 763 pages. Illus. New York: D. Appleton & Company, 1928.

**THE TREATMENT OF DIABETES MELLITUS.**

Elliott P. Joslin, M.D. (Harvard), M.A. (Yale); Clinical Professor of Medicine, Harvard Medical School; consulting physician Boston City Hospital; physician to New England Deaconess Hospital. Fourth Edition, enlarged, revised and rewritten. Illustrated. Price, \$9. Philadelphia: Lea & Febiger, 1928.

This well known classic on diabetes mellitus has been rewritten, much omitted and replaced, and material added. The author stresses as the outstanding features of diabetes of today the prolongation of the lives of diabetic children and the replacement of coma by arteriosclerosis as a cause of death. Next in importance are: (a) statistically, the increasing incidence of diabetes among women; (b) physiologically, the influence of insulin, first, upon the storage of glycogen in the muscles as well as in the liver, and second, its probable regulation of the catabolism of protein and fat and the formation of sugar therefrom; (c) pathologically, the involvement of the whole pancreas in the diabetic process; (d) therapeutically, the continued efficacy of insulin despite long use, its adequacy in emergencies, surgical and otherwise, and the possibility of new medical aids in treatment.

The author believes the chief cause of the premature development of arteriosclerosis in diabetes, save for advancing age, is an excess of fat in the body (obesity), in the diet, and in the blood, and that every dose of insulin given the patient defers the advent of arteriosclerosis.

The book is stimulating, shows the drift of diabetic thought and gives the physician tremendous aid in knowing what hurts and what aids the diabetic patient.

C. A. McKINLAY, M.D.

**WHY WE MISBEHAVE.** Samuel D. Schmalhausen. 313 pages. \$3.00. New York: The Macaulay Co., 1928.

The dedication of this book gives a true idea of its character. It is dedicated to "Sigmund Freud, Alfred Adler, Carl Jung, three philosophic physicians who created The New Medicine, The New Psychology and The New Education, pioneers in the science and art of Re-education." In spite of the complimentary introduction by William A. White, renowned psychologist, from St. Elizabeth's Hospital, Washington, D. C., it will

prove to be a disappointment to the average reader. It emphasizes sex as the only important thing in the world and considers such men as Berthrand Russel and Judge Ben Lindsay as great public benefactors.

If something be wrong with modern marriage or modern morality, such teaching as this will contribute nothing, but will add much to the general confusion. This book will bring nothing of interest to any reader. If this be, as suggested, because one be "such a hide-bound conservative as to have lost all capacity for the consideration, understanding and assimilation of ideas that were not originally instilled in his mental constitution" the answer is that nothing is to be gained by the education.

MARGARET WARWICK, M.D.

**A TEXT-BOOK OF GENERAL BACTERIOLOGY.**

Edwin O. Jordan, Ph.D., Professor of Bacteriology in the University of Chicago and Rush Medical College. Ninth edition, thoroughly revised. 778 pages. Price, \$6.00. Philadelphia and London: W. B. Saunders Company, 1928.

Numerous advances in the science of bacteriology have made the new edition necessary. Recent advances in the study of the cause of scarlet fever and the immunity reactions are touched upon. The same may be said of diphtheria. Tularemia is briefly treated.

The book gives the usual classification of pathogenic bacteria, culture methods and the general routine study of bacteria and is mainly intended for a student's text-book.

It is more than a text-book of bacteriology and includes chapters on pathogenic protozoa, spirilla, pathogenic fungi, the bacteria of milk and milk products, bacteria of the nitrogen cycle, bacteria of the arts and industries, and of the air, soil and water.

A chapter unusual in clinical bacteriological texts treats of the bacterial diseases of plants.

FLOYD GRAVE, M.D.

**POLIOMYELITIS, With Especial Reference to Treatment.** W. Russell MacAusland, M.D., Surgeon-in-Chief, Orthopedic Department, Carney Hospital, Boston, Massachusetts. 173 Engravings. Cloth. 402 pp. \$5.50. Philadelphia: Lea & Febiger, 1927.

The orthopedist has often been accused of being a manipulating mechanic without a thorough knowledge of underlying physiology. Much of recent orthopedic literature can disprove this statement but none perhaps as well as W. Russell MacAusland's "Poliomyelitis." A book is best judged by what it teaches. This book teaches all of us, from general practitioner to specialist. The collection of known facts is admirably done and the subject is presented in all its phases. The proper treatment of the early stage is stressed, a point well worth the close attention of the general practitioner who sees these cases most frequently.

The surgical treatment is so well given that it forms an admirable compendium for the specialist and the various indications are so elucidated that the general

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electricity, by discussing one after another the pioneers who marked the progress of this science during the last two centuries. He tells his story as an interwoven and interlocking entity, tracing the development from the early days to the most recent speculations. He deftly brings out the dependence which the work of each scientist has on that of his predecessors, and how it lays the foundations for the great electrical advances of the present age.

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